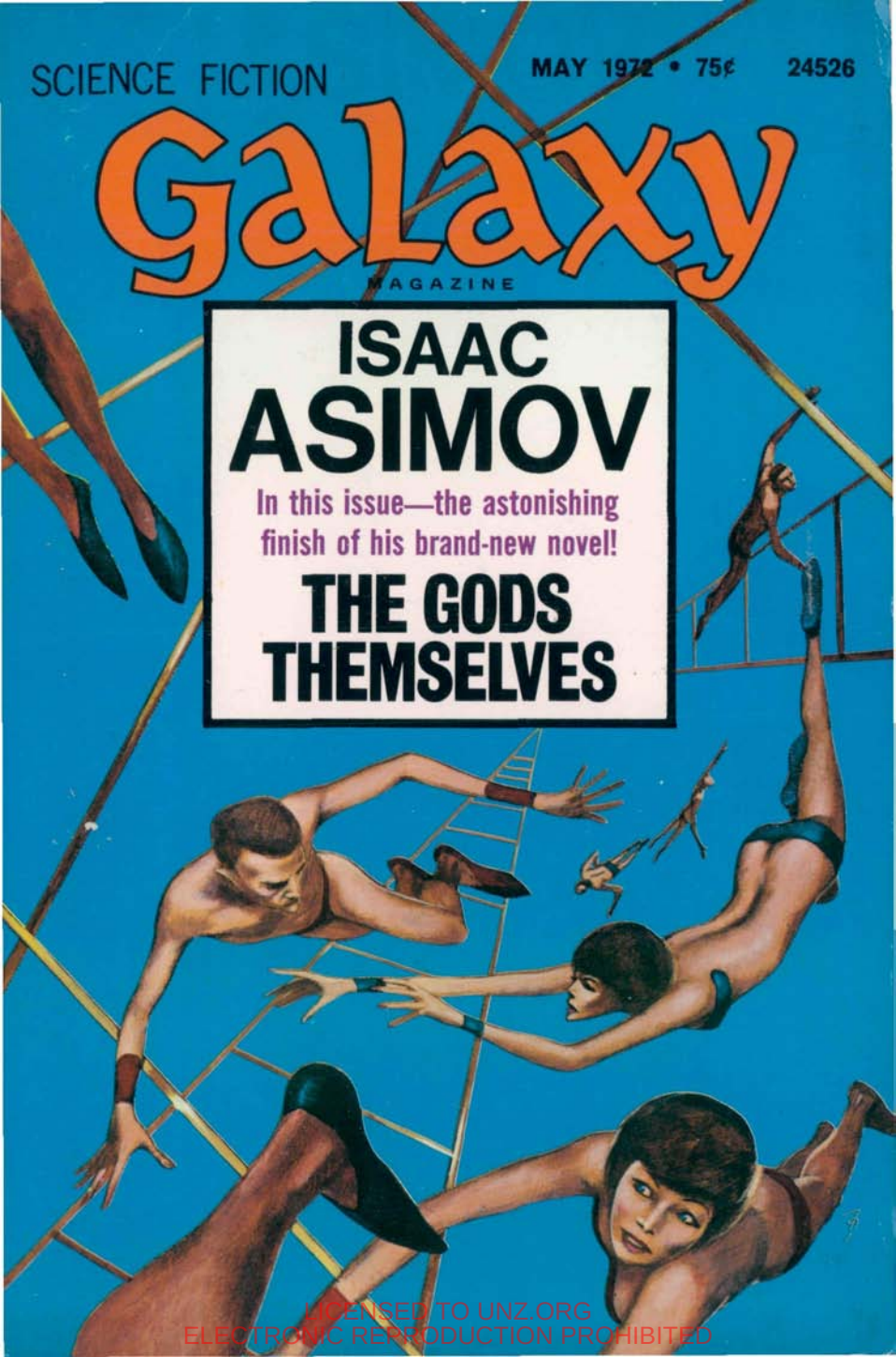

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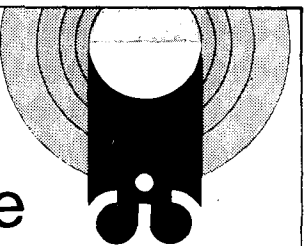

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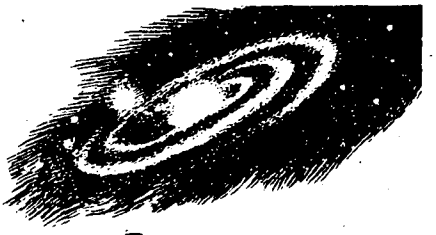

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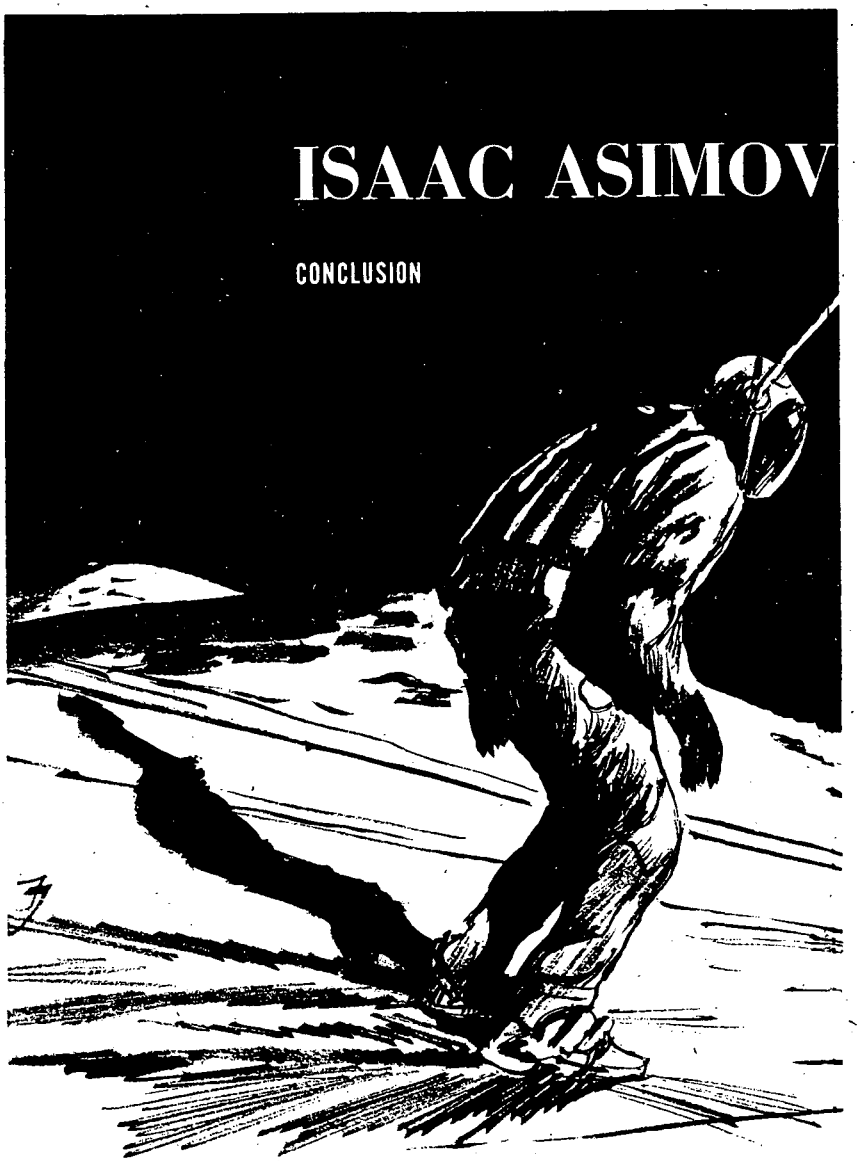

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THE GODS THEMSELVES

"Against stupidity the gods themselves contend in vain . . ."

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WHAT HAS GONE BEFORE

Remember these personae dramatis:

DR. FREDERICK HALLAM..... Known and revered around the globe as the Father of the Electron Pump.

DR. PETER LAMONT..... Brilliant physicist and Hallam's nemesis, who does not believe Hallam fathered the Pump—or that the Pump is the unmixed blessing men believe.

DR. BENJAMIN ALLAN DENISON.. Bright radiochemist, whose disparaging remarks, when both men were young, drove Hallam to eminence.

The story opens approximately a hundred years in the future—on October 3, 2070—when obscure and undistinguished Radiochemist FREDERICK HALLAM discovers that a bottle of tungsten-186, which someone had left on his desk, has mysteriously become converted to an impossible isotope, plutonium-186. Essentially afraid of being ridiculed by his more lustrous and contemporary colleague, DR. BENJAMIN ALLAN DENISON, who habitually gibes at him, HALLAM enlists the aid of a distinguished physicist, KANTROVITSCH, and, leaning on the latter's prestige, announces the new isotope to the world of science.

A seminar is organized to study the revolutionary discovery. It is at first chaired by KANTROVITSCH, but subsequently by HALLAM, following HALLAM'S announcement of his Great Insight. The Great Insight starts out as a fantasy reputable scientists are afraid to touch. It postulates the existence of a Universe parallel to ours—a "para-Universe"—whose physical laws permit the existence of plutonium-186 as a stable element, but will not tolerate tungsten-186. A gateway, says HALLAM, has been opened between the two Universes, permitting our tungsten-186 to enter the para-Universe, where it becomes radioactively converted to plutonium-186

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and returned. In our Universe the latter element reverts to tungsten-186 with some loss of electrons, giving out immense energy in the process. HALLAM proposes the construction of "Electron Pumps" to harness this energy for man's use. HALLAM'S hypothesis is greeted with reserve, but a scientific team is organized to look into it. Evidence is found that the Great Insight is exactly that and HALLAM'S eminence in science is established—at least in the popular eye.

Within two decades Electron Pumps girdle the globe, producing limitless, virtually no-cost energy with no attendant pollution. Wars and poverty vanish, disease is being conquered—toil, as men have known it, is on its way out. Earth is becoming a new Eden.

These same two decades, however, also produce PETER LAMONT, a brilliant young physicist who questions not only HALLAM'S eminence but the harmlessness of the Electron Pump itself. LAMONT believes that HALLAM'S scientific knowledge is plagiarism, that he stole his Great Insight—and that the design and construction plans for the Electron Pump were handed to him by the inhabitants of the para-Universe, who wanted the Pump built.

According to a popular paper published by HALLAM the plutonium-186 in our Universe emits twenty positrons per nucleus to combine with twenty of our electrons to the total energy-releasing annihilation of both, until it is converted to tungsten-186, which then operates in reverse to serve the para-Universe energy needs. The original raw material is never used up—the sole cost is the loss to our Universe of twenty electrons per atomic nucleus of the plutonium-186. At this rate, HALLAM and leading scientists maintain, possible negative effects will not be felt while our Universe lasts. LAMONT'S calculations, however, lead him to the conviction that the effects of the constant electron drain are not evenly distributed throughout the Universe, but are concentrated immediately in our solar system, thus quickly threatening not only the solar system but the entire arm of the galaxy with annihilation.

HALLAM'S prestige and opposition deny LAMONT a hearing in both scientific and governmental circles, prevent him from publishing his findings and wreck his career, as they have wrecked DENISON'S, who also had incurred HALLAM'S wrath. In his efforts to prove that the Pump represents a real peril, LAMONT succeeds in establishing communications with the para-people —and learns that among them, too, concern exists regarding the operation of the inter-Universe Electron Pump. He receives from them a desperate call for help in stopping it—though contact between humans and the para-Universe inhabitants had been thought impossible. From the tungsten-186/plutonium-186 interaction many of their conditions of life become inferable. Fusion, for example, is likelier in their Universe than in ours and their suns would be smaller, perhaps

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fewer than ours and rapidly cooling. (The section of this work dealing with the para-Universe appeared in the April issue of If.*) In the absence of other information the para-beings are visualized as direct consumers of energy—it is their food. We also know many of their approximate characteristics and that they understand and can manipulate matter at the subatomic level.*

LAMONT is unable to respond to the urgent appeal for help from the para-Universe—he has been effectively silenced by HALLAM. The voice of protest appears similarly to have been stilled in the para-Universe. The Pumps Pump on.

1

SELENE LINDSTROM smiled brightly and walked with the light springy touch that was startling when first seen by the tourists, but was soon recognized as having a grace of its own.

"It's time for lunch," she said cheerfully. "And all home-grown, ladies and gentlemen. You may not be used to the taste, but it's all nourishing— Right here, sir. You won't mind sitting with the ladies, I know. One moment—there will be seats for all. Sorry, there will be a choice on the beverage, but not on the main course—that will be veal—artificial flavor and texture, but it's really quite good."

She herself finally sat down with a sigh and the briefest wavering of her pleasant expression.

One of the group seated himself across from her.

"Do you mind?" he asked.

She looked at him quickly, penetratingly. She had the faculty of making fast judgments—he did not seem troublesome.

She said, "Not at all. But aren't you with someone in this group?"

He shook his head. "I'm alone. But even if that were not the case —Earthies are no thrill to me."

She looked at him again. Fifty-ish. She saw a weariness about him, belied only by his bright, inquisitive eyes. He had the unmistakable look of the Earthman, laden with gravity.

She said, "'Earthie' is a Moon expression—and not a nice one."

"I'm from Earth," he said, "so I can use it without offense, I hope. Unless you object."

Selene shrugged as though to say, *Please yourself* . . .

She had the faintly Oriental look about the eyes so many of the Moon girls had, but her hair was the color of honey and her nose was prominent. She was undeniably attractive without being in any way classically beautiful.

The Earthman was staring at the name plate she wore on the blouse covering the upper slope of her high, not-too-large left breast. She decided it was really the name plate he was looking at, not the breast, though the blouse was semi-transparent when it caught the light at a particular angle and she wore no garment beneath it.

He said, "Are there many Selenes here?"

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"Oh, yes. Hundreds, I think. Also Cynthias, Dianas and Artemises. Selene is a little tiresome. Half the Selenes I know are called 'Silly' and the other half 'Lena.'"

"Which are you?"

"Neither. I am Selene, all three syllables. SELL-uh-nee," she said, coming down heavily on the first syllable, "to those who use my first name at all."

The small smile sat on the Earthman's face as though he weren't quite used to it. "And what if anyone asks you if you sell any, Selene?"

"They never ask me again," she said firmly.

"But do they ask you?"

"There are fools always."

A waitress had reached their table and had placed the dishes before them with quick, smooth motions.

The Earthman was visibly impressed. He said to the waitress, "You make them seem to float down."

The waitress smiled and moved on.

Selene said, "Don't you try to do the same. She's used to the gravity and can handle it."

"And if I try, I'll drop everything? Is that it?"

"You'll make a gorgeous mess," she said.

"Well, I won't try."

"There's a good chance someone will before long—the plate will float to the floor and all at the table will grab for it and miss and ten to one knock themselves out of their chairs. I'd warn them, but it never helps and they're just all the more embarrassed. The other tourists will laugh. The rest of us have seen it too often to find it funny—to us it just means a clean-up job."

THE Earthman was lifting his fork carefully. "I see what you mean. Even the simplest motions seem strange."

"Actually, you'll get used to the gravity quickly enough. At least in little things like eating. Walking is harder. I never saw an Earthman run efficiently out there. Not quite efficiently."

For a while they ate in silence. Then he asked, "What does the *L* stand for?" He was looking at her name plate again. It said, SELENE LINDSTROM L.

"It just means Luna," she said rather indifferently, "to distinguish me from the immigrants. I was born here."

"Really?"

"That's nothing to be surprised about. We've had a working society here for more than half a century. Don't you think babies are born here? We have people here who were born here and are grandparents."

"How old are you?"

"Thirty-two," she said.

He looked startled, then mumbled, "Of course."

Selene raised her eyebrows. "You mean you understand? Most Earthmen have to have it explained."

The Earthman said, "I understand enough to know that most of the visible signs of aging are the result of the inexorable victory of gravity over tissue—the sagging of cheek and the drooping of breast. The Moon's gravity is

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one-sixth that of Earth—it isn't really hard to figure why people here stay young-looking."

Selene said, "Only young *looking*. We don't have immortality. The lifespan is about that on Earth—but most of us are more comfortable in old age."

"That's not to be dismissed. Of course, you suffer penalties." He had just taken his first sip of Moon coffee. "You have to drink this—" He paused for a word and must have discarded it, for he used none.

"We could import food and beverages from Earth," she said, amused, "but only enough to feed a fraction of us a fraction of the time. What would be the point? We can use the cargo space for more vital items. Besides, we're used to this crud—or were you going to use a stronger word?"

"Not for the coffee," he said. "I was going to save that for the food. But crud will do. Tell me, Miss Lindstrom. I didn't see any mention of the tour itinerary of the proton synchrotron."

"The proton synchrotron?" She was finishing her coffee and her eyes were beginning to slide round the room as though estimating the moment for getting her charges to their feet again. "That's Terrestrial property and it's not open to tourists."

"Off-limits to Lunarites, too?"

"Oh, no. Nothing of the sort. Most of its staff are Lunarites. But the Terrestrial government sets the rules. No tourists."

"I'd love to see it," he said.

She said, "I'm sure you would. You've brought me luck—not one item of food, not one blessed man or woman, has hit the floor."

She rose and said, "Ladies and gentlemen, we'll be leaving in about ten minutes. Please leave the plates where they are. There are rest rooms for those who wish to use them. Then we will visit the food-processing plants where meals such as you have just eaten are made possible."

2

SELENE'S quarters were small, of course, and compact, but they were intricate. The windows were panoramic, showing star scenes that changed slowly and randomly, without relationship to any known constellation. Each of the three windows could be made to undergo telescopic magnification when Selene so desired.

Barron Neville hated these stellar extravaganzas. He tended to turn them off rather savagely and say, "How can you stand them? You're the only one I know who has the bad taste to go for these things. It's not as though those nebulae and star clusters even exist."

And Selene would shrug coolly and say, "What's existence? How do you know the ones out there exist? These displays give me a sensation of freedom and motion. May I have that in my own quarters if I choose?"

Neville would mumble something and make a half-hearted attempt to restore the controls to where he had found them and Selene would say, "Let it go—"

The furniture was in smooth curves and the walls were abstract-

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ly decorated in unobtrusive low-key colors. Nowhere was there representation of anything that might be considered a living thing.

"Living things are Earth," Selene would say, "not the Moon."

As she entered she found—as so often—Neville present. Barron Neville rested on the flimsy couch, one foot sandaled. The other sandal lay on the floor where it had dropped. She saw a line of red marks on his abdomen, just over his umbilicus, where he had been meditatively scratching.

She said, "Get us some coffee, won't you, Barron?" and slipped out of her clothes in a long, graceful wiggle accompanied by a sigh. She let the skirt drop, then kicked it into the corner with one toe.

"What a relief to get out of them," she said. "The worst part of the job is having to dress like an Earthie."

Neville was in the kitchen corner. He paid no attention—he had heard her before. He asked, "What's wrong with your water supply? It's pretty far down."

"Is it?" she asked. "Well, I've been over-using, I suppose. Just be patient."

"Any trouble today?"

Selene shrugged. "No. Just the usual bit, watching them teetering along and pretending they don't hate the food—and wondering if they'll be asked to take off their clothes, I shouldn't wonder. Disgusting possibility."

"Are you taking up prudery?" He brought two small cups of coffee to the table.

"In this case prudery is required. They're wrinkled, sagging, paunchy and full of germs. I don't care what the quarantine regulations are like—Earthies are full of germs. What's new on your side?"

Barron shook his head. He was heavily built for a Lunarite and the sullen narrowing of his eyes had become a built-in feature. His other features were remarkably handsome, Selene thought.

He said, "Nothing startling. We're still waiting out the change in Commissioners. We'll have to see what this Gottstein is like."

"Can he make difficulties?"

"No more than are being made. After all, what can they do? They can't infiltrate. You can't disguise an Earthie as a Lunarite." He appeared uneasy, just the same.

SELENE sipped her coffee and looked at him shrewdly. "Some Lunarites might be Earthies inside."

"Yes, and I'd like to know which. Sometimes I don't think I can trust — Oh, well. I'm wasting incredible amounts of time with my synchrotron project and getting nowhere. I'm having no luck with priorities."

"They probably don't trust you —and I don't blame them. If you didn't slink around so conspiratorially—"

"I do no such thing. It would give me great pleasure to walk out of the synchrotron room and never return, but then they *would* become suspicious. If you've been raising hell with your water supply, Selene, I suppose we can't have a second cup."

"No, we can't. But if it comes to that, you've been helping me waste water. You've had two showers here in the last week."

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"I'll give you a water credit. I didn't know you were counting."

"I'm not counting. My water level is." She finished her own cup of coffee and stared at its emptiness thoughtfully. She said, "They always make faces over our coffee—the tourists do. And I can never figure out why. It tastes fine to me. Did you ever taste Earth coffee, Barron?"

"No."

"I did. Once. Some tourist had smuggled in packets of what he called instant coffee. He offered me some in exchange for you-know-what. Seemed to think it was an even trade."

"And you had some?"

"I was curious. It was bitter and metallic. I hated it. Then I told him that miscegenation was against Lunarite custom and he turned rather bitter and metallic himself."

"You never told me this. He didn't try anything, did he?"

"It's not particularly your business, is it? And, no, he didn't try anything. If he had tried—at the wrong gravity for him—I'd have bounced him from here to Corridor One." She paused, then went on: "Oh, yes. I picked up another Earthie today. Insisted on sitting with me."

"And what did he offer you in exchange for the screwing you so delicately call you-know-what?"

"Just sat there."

"And stared at your breasts?"

"They're there to be stared at, but actually he didn't. He stared at my name plate. Besides, what's it to you what he fantasied? Fantasies are free and I don't have to fulfill them. What do you think I'm fantasying? Bed with an Earthman? With all the action you would expect of someone trying to handle a gravitational field he isn't used to? I wouldn't say it hasn't been done, but not by me—and I've never heard any good of it. Is that settled? Can I get back to the Earthie? Who's over fifty? And who obviously wasn't terrifically handsome even when he was twenty? Interesting appearance, though—I'll grant him that."

"All right. I can do without a thumbnail sketch. What about him?"

"He asked about the proton synchrotron."

Neville rose to his feet, swaying a little as was almost inevitable after quick movement at low gravity. "What did he ask about the synchrotron?"

"Nothing. Why are you so excited? You requested that I tell you anything that was out of the way with any tourist at any time and this seemed out of the way. No one ever asked me about the synchrotron before."

"All right." He paused a little, then in a normal voice, said, "Why was he interested in the synchrotron?"

"I haven't the faintest idea. He just asked if he could see it. It could be that he's a tourist fascinated by science. For all I know his question was just a ploy to get me interested in him."

"And I suppose you are. What's his name?"

"I don't know. I didn't inquire."

"Why not?"

"Because I'm not interested in

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him. Which way do you want it to be? Besides, his asking shows he's a tourist. If he were a physicist he wouldn't have to ask. He'd be there."

"My dear Selene," said Neville, "let me spell it out. Under the present circumstances anyone who asks to see the proton synchrotron is a peculiar fellow we want to know about. And why should he ask you, specifically you?" He moved restlessly in the small confines as though trying to work off energy. Then: "You're the expert at that nonsense. Do you find him of interest?"

"Sexually?"

"You know what I mean. Don't play games, Selene."

Selene said with clear reluctance, "He's interesting, even disturbing. But I don't know why. He said nothing. He did nothing."

"Interesting and disturbing, is he? Then you will see him again."

"And do what?"

"How do I know? That's your bit. Find out his name. Find out anything else you can. You've got some brains. Use them on a little practical nosiness for a change."

"Oh, well," she said, "orders from on high. All right."

3

THERE was no way of telling the Commissioner's quarters by size alone from those of any Lunarite. Space was limited on the Moon even for Terrestrial officials —no luxurious waste was displayed as a symbol of the authority of the home planet. Nor, for that matter, was there any way of

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MARCH *and April (which is when you ought to be reading this) are particularly rich, leading off with JBC's* **Domnei**—*his usual exquisite bawdy romp—and Lin Carter's own* **Discoveries In Fantasy**, *featuring four well-known "mainstream" writers who were (virtually in secret) producing provocative fantasy. . . Also, an absolutely delicious, delightfully sophisticated fantasist, Ernest Bramah. His first for us (and* **what** *a cover!)* **Kai Ling's Golden Hours.** *Bramah is some kind of past master at the art of the written double-take. And God love his ever-living English.*

●

IN SCIENCE FICTION *we have a new boy for our list, but one who is very much known to s.f. fans. Keith*

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Laumer has contributed five of his fine stories for a collection titled **Timetracks**. *And we have an honest-to-God first novel by Alan Dean Foster—solid, inventive, packed with ideas—* **The Tar-Aiym Krang**. *Then the Pope is at it again with* **The Reality Trip And Other Implausibilities**—*a collection we like even better than most. Douglas R. Mason is back with a weirdo—***The Resurrection of Roger Diment**.

●

WE HAVE *the Anthony Burgess opus* **MF**. *And, of course, his remarkable* **A Clockwork Orange** *which, if you have not read it yet, you certainly should. By all means see the movie, too—it's not as violent or as harsh as the book, but it is, pictorially, just as strong a statement against violence.*

●

REMEMBER Stand on Zanzibar? *We asked John Brunner if he would like to do a second novel on a major ecological subject and we are happy to announce that Harper has contracted for hardcover publication of* **The Sheep Look Up**. *They are scheduling it for early fall. And we're hoping for a book-club sale. Elaine Geiger has demonstrated her usual perspicacity and bought Dave Gerrold's* **When Harlie Was One** *for the book club. And that too will later come from. . .* ***BB***

changing the overwhelming fact about the Moon—that its low gravity made life possible only underground—even for the greatest Earthman who ever lived.

"Man is still the creature of his environment." Luiz Montez then sighed. "I've been two years on the Moon and have known times when I have been tempted to stay on, but—I'm getting along in years. I've just passed my fortieth, and if I intend ever to go back to Earth it had better be now. Any older and I won't be able to readjust to full gravity."

Konrad Gottstein was thirty-four and looked younger. He had a wide, round and large-featured face, the kind one did not see among the Lunarites—the kind they would draw as an Earthie caricature. He was not heavily built—it did not pay to send heavily built Earthmen to the Moon—and his head seemed too large for his body.

He said—he spoke Planetary Standard with a perceptibly different accent from that of Montez—"You sound apologetic."

"I am, I am," said Montez. Where Gottstein's face was intrinsically good-natured in appearance, the long thin lines of Montez' rendered it almost comically tragic. "I am apologetic in both senses. I am embarrassed to be leaving the Moon, since it is an attractive world filled with excitement. And I am embarrassed about the embarrassment—ashamed that I should be reluctant to take up Earth's burden, gravity and all."

"Yes, I imagine taking back the other five-sixths will be hard," said

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Gottstein. "I've been on the Moon only a few days and already I feel that one-sixth G is perfectly fine."

"You won't feel so when the constipation starts and you begin living on mineral oil," said Montez with a sigh. "But that will pass. And don't think you can imitate a gazelle just because you feel light. There's an art to it."

"So I understand."

"You think you understand, Gottstein. You haven't seen the kangaroo-walk, have you?"

"On television."

"That doesn't give you the feel of it. You have to try it. It's the proper mode for crossing level lunar surface at high speed. The feet move backward together and launch you on what would be a simple broad-jump on Earth. While you're in midair, they come forward and begin moving back just before they hit the ground again—keep you launched and so on. The motion seems slow by Earth standards with only a low gravity whipping you on, but each leap is in excess of twenty feet and the amount of muscular effort required to keep you aloft is minimal. The sensation is similar to that of flying."

"Have you tried it? Can you do it?"

"I've tried it, but no Earthman can really do it. I've kept it up for as many as five leaps in a row, enough to get the sensation—just enough to want to do more—but then there is the inevitable miscalculation, a loss of synchronization and you tumble and slide for a quarter of a mile. The Lunarites are polite and never laugh at you. Of course, it's easy for them. They start as children and pick it up at once without trouble."

"It's their world," said Gottstein, chuckling. "Think how they'd be on Earth."

"They wouldn't be on Earth. They can't. I supposed that's an advantage on our side. We can be either on Moon or on Earth. They can live only on the Moon. We tend to forget that—because we confuse the Lunarites with Immies."

"With what?"

"That's what they call the Earth immigrants—those who live on the Moon more or less permanently but were born and raised on Earth. The immigrants can, of course, return to Earth, but the real Lunarites have neither the bones nor the muscles to withstand Earth's gravity. There were some tragedies in that respect in the Moon's early history."

"Oh?"

"Oh, yes. People who returned with their Moon-born children. We tend to forget. We've had our own Crisis, and a few dying children don't seem important in the light of the huge casualties of the late twentieth century and all that followed. Here on the Moon, though, every dead Lunarite who succumbed to the gravity of Earth is remembered. It helps the people here to feel a world apart, I think."

GOTTSTEIN said, "I thought I had been thoroughly briefed on Earth, but it seems I still have a lot to learn."

"Impossible to learn everything on Earth, but I have left you as full a report as my predecessor bequeathed me. You'll find the Moon

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fascinating and, in some ways, excruciating. I doubt that you've eaten Lunar rations on Earth—and if you're going by description only, you will not be prepared for the reality. However, you'll have to teach yourself to like the food. It's bad policy to ship Earth items here. We've got to eat and drink the local products."

"You've been doing it. I guess I'll survive."

"I've not been doing it steadily. There are periodic furloughs to Earth. Those are obligatory, whether you want them or not. They've told you that, I'm sure."

"Yes," said Gottstein.

"Despite any exercises you do here, you will have to subject yourself to full gravity now and then just to remind your bones and muscles what it's like. And when you're on Earth, you'll eat. And occasionally some food is smuggled in."

Gottstein said, "My luggage was carefully inspected, of course, but it turned out there was a can of corned beef in my coat pocket. I had overlooked it. So did they."

Montez smiled slowly and said hesitantly. "I suspect you are now going to offer to share it."

"No," said Gottstein judiciously, wrinkling his large button nose. "I was going to say with all the tragic nobility I could muster, 'Here, Montez, have it all! Thy need is greater than mine.'" He stumbled a bit in trying to say this —he had rarely used second person singular in Planetary Standard.

Montez smiled more broadly, then let the expression vanish. He shook his head. "No. In a week I'll have all the Earth food I can eat. You won't. Your mouthfuls will be rare in the next few years and you will spend too much time regretting your present generosity. You keep it all—I insist. Or I would only be earning your hatred *ex post facto.*" He seemed serious, his eyes looking straight into Gottstein's. "Besides, there is something I want to talk to you about. I've been putting off discussion because I don't know how to approach it, and this food would be an excuse for further sidetracking."

Gottstein pocketed the Earth can at once. His face could not match Montez' in seriousness, but his voice was grave and steady. "Is there something you could not include your dispatches, Montez?"

"There was something I tried to include, Gottstein, but between my not knowing how to phrase it and Earth's reluctance to grasp my meaning—we ended up not communicating. You may do better. I hope you do. One of the reasons I have not asked to have my tour of duty extended is that I can no longer take the responsibility for my failure to communicate."

"You make it sound serious."

"I wish I could make it sound serious. Frankly, it sounds silly. There are only some ten thousand people in the Lunar colony. Rather less than half are native Lunarites. They're hampered by an insufficiency of resources, an insufficiency of space, a harsh world—and yet—and yet—"

"And yet?" said Gottstein.

"Something is going on here—I don't know exactly what—that may be dangerous."

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"How can it be dangerous? What can they do? Make war against the Earth?" Gottstein's lips trembled on the edge of a smile.

"No. It's more subtle than that." Montez passed his hand over his face, rubbed his eyes. "Let me be frank with you. Earth has lost its nerve."

"What does that mean?"

"Well, what would you call it? Just about the time the Lunar colony was being established, Earth went through the Great Crisis. I don't have to tell you about that."

"No, you don't," said Gottstein, with distaste.

"The population is two billion now, down from its six billion peak."

"Earth is much better for that, isn't it?"

"Oh, undoubtedly, though I wish there had been a better way of achieving the drop. But what happened left behind a permanent distrust of technology, a vast inertia, a lack of desire to risk change because of the possible side-effects. Great and possibly dangerous efforts have been abandoned because the danger was feared more than greatness was desired."

"I take it you refer to the program on genetic engineering."

"That's the most spectacular case, of course, but not the only one," said Montez bitterly.

"Frankly, I can't get excited over the abandonment of genetic engineering. It was a tissue of failures."

"We lost our chance at Intuitionism."

"There has never been any evidence that Intuitionism is desirable —and we have considerable indication of its undesirability. Besides what about the Lunar colony itself? This certainly is no indication of stagnation on Earth."

Montez said vigorously, "The Lunar colony is a hangover, a last remnant of the period before the Crisis—something that carried through as a last sad forward thrust of mankind before the big retreat."

"That's too dramatic, Montez."

"I don't think so. Earth has retreated, mankind has retreated—everywhere but on the Moon. The Lunar colony is man's frontier not just physically, but psychologically, too. Here is a world that doesn't have a web of life to disrupt, that doesn't have a complex environment in delicate balance to upset. Everything on the Moon that is of any use to man is man-made. The Moon is a world constructed by man from the start and out of basics. There is no past."

"Well?"

"On Earth we are unmanned by our longing for a pastoral past that never really existed—and that, if it had existed, could never exist again. In some respects, much of the ecology was destroyed in the Crisis and we are making do with the remnants—so that we are frightened, always frightened. On the Moon there is no past to long for or dream about. There is no direction but forward."

MONTEZ seemed intoxicated by his own words.

"Gottstein," he continued fever-

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ishly, "I have watched it for two years—you will watch it for at least that much longer. There is a fire here on the Moon, a restless burning. The people here expand in every direction. They expand physically. Every month new corridors are bored, a new living quarters established, a new population potential is made room for. They expand resources by developing new construction materials, new water sources, new lodes of specialized minerals. They expand their sun-powered battery banks, enlarge their electronics factories. I suppose you know that these ten thousand people here on the Moon are now the major source for Earth's supply of mini-electronic devices and fine biochemicals."

"I know they're an important source."

"Earth lies to itself for comfort's sake. The Moon is the major source. At the present rate it may soon become the sole source. Its people expand intellectually, too. Gottstein, I imagine there isn't a bright science-oriented youngster on Earth who doesn't vaguely—or perhaps not so vaguely—dream of going to the Moon one day. With Earth in retreat from technology, the Moon is where the action is."

"You're referring to the proton synchrotron, I suppose?"

"That's one example. When was the last new synchrotron built on Earth? But it's just the biggest and most dramatic item—not the only or even the most important. If you want to know what is the most important scientific device on the Moon—"

"Something so secret I haven't been told?"

"No, something so obvious that no one seems to notice. It's the ten thousand brains here. The ten thousand best human brains in existence. The only close-knit group of ten thousand human brains that are, in principle and by emotion, science-oriented."

Gottstein moved restlessly and tried to shift his chair's position. It was bolted to the floor and wouldn't move, but in the attempt to make it do so Gottstein found himself skittering from the seat. Montez reached out an arm to steady him.

Gottstein flushed. "Sorry."

"You'll get used to the gravity."

Gottstein said, "But aren't you making it out a lot worse than it is? Earth isn't a know-nothing planet altogether. We did develop the Electron Pump. That's a purely Terrestrial accomplishment. No Lunarite had anything to do with it."

Montez shook his head and muttered a few words in his native Spanish. They did not sound placid. He asked, "Have you ever met Frederick Hallam?"

Gottstein smiled. "Indeed I have. The Father of the Electron Pump. I believe he has the phrase tattooed on his chest."

"The mere fact that you smile and make that remark proves my point, really. Ask yourself: Could a man like Hallam really have fathered the Electron Pump? The story will do for the unthinking multitude, but the truth is—and you must know this—there is no father to the Electron Pump. The

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para-people, the people in the para-Universe—whoever they are and whatever that is—invented it. Hallam was their accidental instrument. All of Earth is their accidental instrument.

"We were clever enough to take advantage of their initiative."

"Yes, as cows are clever enough to eat the hay we provide for them. The Pump is no sign that man is looking forward. Quite the reverse."

"If the Pump is a backward step, then I say good for backwardness. I wouldn't want to do without it."

"Who would? But the point is, it fits Earth's present mood perfectly. Infinite energy at virtually zero cost—except for maintenance—and zero pollution. But there are no Electron Pumps on the Moon."

Gottstein said, "I imagine there's no need for them. The solar batteries supply what the Lunarites require. 'Infinite energy at virtually zero cost—except for maintenance—and zero pollution.' Isn't that the litany?"

"Yes, indeed. But the solar batteries are entirely man-made. An Electron Pump was projected for the Moon—installation was attempted—"

"And?"

"And it didn't work. The para-people didn't accept the tungsten. Nothing happened."

"I didn't know that. Why not?"

MONTEZ lifted his shoulders and eyebrows expressively. "How is one to know? We might assume, for instance, that the para-people live on a world without a satellite—that they have no conception of separate worlds in close proximity, each populated. That having found one contact they did not seek another. Who knows? The thing is that the para-people didn't bite and we ourselves, without them, could do nothing."

"We ourselves," Gottstein repeated. "By that you mean the Earthmen?"

"Yes."

"And the Lunarites?"

"They were not involved."

"Were they interested?"

"I don't know. That's where my uncertainty—and fear—chiefly rest. The Lunarites—the native Lunarites particularly—do not feel like Earthmen. I don't know what their plans are or what they intend. I can't find out."

Gottstein looked thoughtful. "But what can they do? Do you have any reason to suppose they intend to do us harm—or that they can do Earth harm even if they intend it?"

"I can't answer that question. They are an attractive and intelligent people. It seems to me they lack real hatred or real rage or even real fear. But perhaps that is only how they seem to me. What bothers me most is that I don't know."

"The scientific equipment on the Moon is run by Earth, I believe."

"That is correct. The proton synchrotron is. The radio telescope on the trans-terrestrial side is. The three hundred-inch optical telescope is. The large equipment, you notice, all of which has been in existence for fifty years—"

"And what's been put in since?"

"Very little by Earthmen."

"What about the Lunarites?"

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"I'm not sure. Their scientists work in the large installations, but I once tried to check time cards. There are gaps."

"Gaps?"

"They spend considerable time away from the installations. It is as though they might have laboratories of their own."

"Well, if they produce mini-electronic devices and fine biochemicals—isn't that to be expected?"

"Yes, but— Gottstein, I don't know. I fear my ignorance."

A moderately long pause ensued.

Gottstein finally broke it. "Montez, I take it you are telling me all this so that I will be careful—so that I will try to find out what the Lunarites are doing?"

"I suppose that's about it," said Montez unhappily.

"But you don't even know that they're doing anything at all."

"I feel that they are."

Gottstein said, "It's odd, then. I should be trying to talk you out of all this fearful mysticism of yours—but it's odd—"

"What is?"

"The same vessel that brought me to the Moon brought some one else. I mean, a large party came, but one face in particular triggered something in my memory. I didn't talk to him—had no occasion to—and I dismissed the matter. But now our talk is pushing a button and he suddenly comes back to mind."

"Yes?"

"I was on a committee once that dealt with Electron Pump matters. A question of safety arose." He smiled briefly. "Earth's lost nerve, you might say. We worry about safety everywhere—and a good thing, damn it, lost nerve or not. The details escape me, but in connection with that hearing I saw the man I saw again on the vessel. I'm convinced of it."

"Does that have significance, do you think?"

"I'm not sure. I associate that face with something disturbing. What it was may come back to me. In any case, I had better get a list of the passengers and see if any name means something to me. Too bad, Montez, but I think you're getting me started."

"Not bad at all," said Montez. "I'm glad of it. As for this man—he may be only a tourist of no consequence who will be gone in two weeks, but I am glad to have you on the alert."

Gottstein did not seem to be listening. "He is a physicist, or a scientist of some sort," he muttered. "I'm certain of it and I associate him with danger—"

4

"HELLO," Selene said cheerfully.

The Earthman turned. Recognition took almost no time at all. "Selene. Am I right? Selene?"

"Right. Correctly pronounced. Enjoying yourself?"

The Earthman said gravely, "Very much. Being here makes me realize how unique our century is. Not so long ago I was on Earth, feeling tired of my world, tired of myself. Then I thought, "Well, if I were living a hundred years ago, the only way I could leave the world

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would be to die, but now—I can go to the Moon." He smiled, and the smile too was grave.

Selene asked, "Are you happier now that you're on the Moon?"

"A little." He looked about. "Don't you have a crowd of tourists to nurse?"

"Not today. It's my day off. Who knows, I may take off two or three. It's a dull job."

"What a shame then—you bump into a tourist on your day off."

"I didn't bump into you. I came looking for you. You're a hard one to find, too. You shouldn't wander off by yourself."

The Earthman gazed at her with interest. "Why look for me? Are you fond of Earthmen?"

"No," she said with easy frankness. "I'm sick of them. I dislike them on principle and being constantly associated with them in my job makes it worse."

"Yet you came looking for me and there isn't a way on Earth—on Moon, I mean—I can convince myself I am young and handsome."

"It wouldn't help if you were. Earthmen don't interest me romantically, as everyone but Barron knows."

"Then why the search?"

"Because there are other ways of being interested and because Barron is interested."

"And who is Barron? Your boy-friend?"

Selene laughed. "Barron Neville. He's a lot more than a boy and a lot more than a friend. We have sex when we feel like it."

"Well, that's what I meant. Do you have children?"

"One boy. He's ten. He spends most of his time in the boys' compound. To spare you the next question, he's not Barron's. I may have a child by Barron if we're still together when I'm assigned another child—if I'm assigned another child. I'm pretty sure I will be."

"You're quite frank."

"About things I don't believe require secrecy? Of course. Now, what would you like to do?"

They had been walking along a corridor of milk-white rock, into the glazed surface of which were set dusky "Moon gems" that lay about for the taking in most sections of the Lunar surface. She wore sandals that scarcely seemed to touch the ground. He wore thick-soled boots, which leadenly helped weigh him down to keep his steps from becoming torture.

The corridor was one-way. Occasionally a small electric cart would overtake them and move past almost silently.

The Earthman asked, "What would I like to do? That is a broad-beamed invitation. Would you care to set boundary conditions so that my answer may not innocently offend you?"

"Are you a physicist?"

The Earthman hesitated. "Why do you ask?"

"Just to hear what you will say. I know you're a physicist."

"How?"

"No one says 'set boundary conditions' unless he is. Especially if the first thing he wants to see on the Moon is the proton synchrotron."

"Is that why you came looking for me? Because you thought I might be a physicist?"

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"That's why Barron sent me looking for you. You see, he is a physicist. I came because I thought you rather unusual for an Earthman."

"In what way?"

"Nothing terribly complimentary—if it's compliments you're fishing for. It's just that you seem not to like Earthmen."

"How can you tell that?"

"I watched you look at the others in the party. Besides, I can always tell. Earthies who don't like Earthies tend to stay on the Moon. Which brings me back to the question—what would you like to do? And I'll set the boundary conditions. I mean, as far as sightseeing is concerned."

The Earthman looked at her sharply. "That's peculiar, Selene. You have a day off. Your job is sufficiently uninteresting or distasteful for you to be glad to have that day off and you would be willing to make it two or three. Yet your way of spending it is to volunteer to resume your job for me particularly. Just because of a little interest?"

"Barron's interest. He's busy now and there's no harm in my entertaining you until he's ready. Besides, it's different. Can't you see it's different? On my job I'm riding herd on a couple of dozen Earthies— Don't you mind my using the term?"

"I use it myself."

"But you use it as an Earthman. Some Earth people consider it a term of derision and resent it when a Lunarite uses it."

"You mean when a Lunie uses it?"

Selene flushed. "Yes. That's about it."

"Well, then, let's neither of us cry over words. Go ahead—you were telling me about your job."

"On my job there are these Earthies I have to keep from killing themselves and whom I have to take here and there and give little speeches to and make sure they eat and drink and walk by the book. They see their little pet sights and do their little pet things, and I have to be polite and motherly.

"Awful," said the Earthman.

"But you and I can do as we please, I hope, and you are willing to take your chances and I don't have to watch what I say."

"I told you that you're perfectly welcome to call me an Earthie."

"All right, then. I'll have a busman's holiday—there's an Earthie expression for you. What would you like to do?"

"I want to see the proton synchrotron."

"Not that. Maybe Barron can arrange it. Talk to him."

"Well, if I can't see the synchrotron I don't know what else there is to see. I know the radio telescope is on the other side, but I don't suppose there's any novelty in it. You tell me. What doesn't the average tourist get to see?"

"A number of things. There are the algae rooms—not the antiseptic processing plants, which you've seen—but the farms themselves. However, the smell is pretty strong there and I don't suppose an Earthie—Earthman—would find it particularly appetizing. Earthmen have enough trouble with the food, as it is."

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"Does that surprise you? Have you ever tasted Earth food?"

"Not really. I probably wouldn't like it, though. It all depends on what you're used to."

"I suppose so," said the Earthman, sighing. "If you ate a real steak you'd probably gag at the fat and fiber."

"We could go to the outskirts where the new corridors are being driven into bedrock, but you'll have to wear special protective garments. There are the factories—"

"You make the choice, Selene."

"I will—if you will tell me something honestly."

"I can't promise without hearing the question."

"I said that Earthies who don't like Earthies tend to stay on the Moon. You didn't correct me. Do you intend to stay on the Moon?"

THE Earthman stared at the toes of his clumsy boots. He said, "I had trouble getting a visa to the Moon. They said I might be too old for the trip and that if I stayed any length of time I might find it impossible to return to Earth. So I told them I planned to stay on the Moon permanently."

"Were you lying?"

"I wasn't sure at the time. But now I think I'll stay here."

"I should have thought that they would have been less willing than ever to let you go under those conditions."

"Why?"

"Generally the Earth authorities don't like to send physicists to the Moon on a permanent basis."

The Earthman's lips twitched. "I had no trouble on that ground."

"Well, then—if you're going to be one of us I think you ought to visit the gymnasium. Earthies often want to but we don't encourage them as a general rule—though it's not forbidden outright. With immigrants, it's different—"

"Why?"

"Well, for one thing, we exercise in the nude or near-nude. Why not?" She sounded aggrieved, as though weary of repeating a defensive position. "The temperature is controlled. The environment is clean. It's just that when people from Earth are present, nudity can become unsettling. Some Earthies are shocked. Some are titillated. Some are both. Well, we're not going to dress in the gymnasium for their sake and we're not going to cope with them, either—we just keep them out."

"But immigrants?"

"They have to get used to it. In the end they'll be discarding clothes, too. And they'll need the gymnasium even more than the native Lunarites do."

"I'll be honest with you, Selene. If I encounter female nudity, I'll definitely find it titillating. I'm not quite so old that I won't."

"Well, titillate then," she said indifferently. "But keep it to yourself. Agreed?"

"Do we have to get undressed, too?" He looked at her with amused interest.

"As spectators? No. We could, but we don't have to. You would feel uncomfortable this early in the game and you wouldn't be a particularly inspiring sight to the rest of us."

"You are frank."

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"Do you think you would be a treat in the altogether? Be honest. And as for myself—I have no wish to put you under a strain by titillating you. So we might both just as well stay clothed."

"Will there be any objection? I mean to my being there as an Earthie of uninspiring appearance?"

"Not if I'm with you."

"Very well, then, Selene. Is it far away?"

"We are there. Just through here."

"Ah, then you were planning to come here all the time."

"I thought it might be interesting."

"Why?"

Selene smiled suddenly. "I just thought."

THE Earthman shook his head. "I'm beginning to get the idea you never just think. Let me guess. If I'm to stay on the Moon I will need to exercise now and then in order to keep muscles, bones and all my organs, perhaps, in condition."

"Quite true. So do all of us, but immigrants from Earth in particular. The day will come when the gymnasium will be a daily grind for you."

They stepped through a doorway and the Earthman stared in astonishment. "This is the first place I've seen that looks like Earth."

"In what way?"

"Why, it's big. I didn't imagine you would have such big rooms on the Moon. Desks, office machinery —women at the desks—"

"Bare-breasted women," said Selene solemnly.

"That part isn't Earthlike, I admit."

"We've got a hold-chute, too, and an elevator for Earthies. There are many levels. But wait."

She approached a woman at one of the nearer desks, talking in a low, rapid voice while the Earthman stared at everything with amiable curiosity.

Selene returned. "No trouble. And it turns out we're going to have a melee. A rather good one—I know the teams."

"This place is impressive. Really."

"If you still refer to its size—it's not nearly big enough. We have three gymnasiums. This is the largest, such as it is—"

"I'm somehow pleased that in the Spartan surroundings of the Moon, you can afford to waste so much space on frivolity."

"Frivolity?" Selene sounded offended. "Why do you think this is frivolity?"

"Melees. Some sort of game?"

"You might call them a game. On Earth you can have such things for sport—ten men doing, ten thousand watching. It's not so on the Moon. What's frivolous for you is necessary for us. This way—we'll take the elevator, which means a little waiting maybe."

"Didn't mean to get you angry."

"I'm not really angry but you must be reasonable. You Earthmen have been adapted to Earth gravity for all the three hundred million years since life crawled onto dry land. You get by even if you don't exercise. We've had no time at all to adapt to Moon gravity."

"You look different enough."

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"If you're born and reared under Moon gravity your bones and muscles are naturally slimmer and less massive than an Earthie's are, but that's superficial. There isn't a bodily function we possess, however subtle—digestion, rates of hormonal secretions—that isn't maladjusted to gravity and that doesn't require a deliberate regimen of exercise. If we can arrange exercise in the form of fun and games that does not make it frivolity. Here's the elevator."

The Earthman hung back in momentary alarm.

Selene said, "I suppose you're going to tell me it looks like a wickerwork basket. Every Earthman who uses it says so. With Moon gravity, it doesn't have to be any more substantial."

The elevator moved down slowly. Selene and the Earthman were the only ones on board.

He said, "I suspect this isn't much used."

Selene smiled again. "You're right. The hold-chute is much more popular and much more fun."

"What is it?"

"Exactly what the name implies. Here we are. We had to drop only two levels. The chute is just a vertical tube you can drop through, with hand-holds. We don't encourage Earthies to use it."

"Too risky?"

"Not in itself. You can climb down as though it were a ladder. However, there are always youngsters swinging down at considerable speed and Earthies don't know how to keep out of the way. Collisions are always discomforting. But you'll get to use the chute in time. In fact, what you'll see now is a kind of large hold-chute designed for recklessness."

SHE led him to a circular railing, around which a number of individuals were leaning and talking. All were more or less in the nude. Sandals were common and usually a hip purse was slung over one shoulder. Some wore briefs. One girl was scooping a greenish mash out of a container and eating it.

The Earthman wrinkled his nose slightly as he passed that one. He said, "The dental problem must be severe on the Moon."

Selene nodded. "If we ever get the chance, we'll select for an edentate jaw."

"Toothlessness?"

"Maybe not complete. We might keep the incisors and canines for cosmetic reasons and for occasionally useful tasks. They're easily cleaned, too. But why should we want useless molars? They're just a hangover from an Earthie past."

"Are you making any progress?"

"No," she said stiffly. "Genetic engineering is illegal. Earth insists." She leaned over the railing. "They call this the Moon's playground."

The Earthman looked down into a large cylindrical construction with smooth pink walls to which metal bars were attached in what seemed a random configuration. Here and there a bar stretched across a portion of the cylinder, sometimes across its entire width. The structure was perhaps four or five hundred feet deep and about fifty feet across.

No one seemed to be paying par-

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ticular attention either to the playground or to the Earthman. Some looked at him indifferently as he passed—seeming to weigh his clothed state, his facial appearance—and then turned away. Some made a casual hand gesture in Selene's direction before turning away, but all turned away. The no-interest signal, however subdued, could not have been more blatant.

The Earthman turned to the cylindrical opening. He saw slim figures at the bottom, foreshortened because they were seen from above. Some wore wisps of clothing in red, some in blue. Two teams, he decided. Clearly the dress served protective functions, since all wore gloves and sandals, protective bands about knees and elbows. Some wore brief bands about the hips, some about the chests.

"Oh," he muttered. "Men and women."

Selene said, "Right. The sexes compete equally and the idea in dress is to prevent the uncontrolled swinging of parts that might hamper the guided fall. There is a sexual difference there and in vulnerability to pain. The clothing is not for modesty."

The Earthman said, "I think I've read of this."

"You may have, though not much seems to get out. Not that we have any objection, but the terrestrial government prefers to keep news of the Moon to a minimum."

"Why, Selene?"

"You're an Earthman. You tell me. Our theory is that we embarrass Earth. Or at least the Earth government."

Two individuals were rising rapidly on opposite sides of the cylinder now. The patter of light drums was heard in the background. At first the climbers seemed to be going up a ladder, rung by rung, but their speed increased and by the time they were halfway up, they were merely striking each hold as they passed, making an ostentatious slapping noise.

"Couldn't do that as gracefully on Earth," said the Earthman admiringly. "Or at all," he amended.

"It's not just the low gravity," said Selene. "Try it, and you'll find that climb takes endless hours of practice."

THE climbers reached the railing and swung to a headstand. They performed simultaneous somersaults and began to fall.

"They can move quickly when they want to," said the Earthman.

"Umm," said Selene, through the patter of applause. "I suspect that when Earthmen—I mean the real Earthmen, the ones who have never even visited the Moon—think of moving around the Moon, they think of the surface and of spacesuits. That's often slow, of course. The mass, with the spacesuit added, is huge and means high inertia."

"Quite right," said the Earthman. "I've seen the classic motion pictures of the early astronauts that all schoolchildren see. The movements are like those underwater. The picture becomes imprinted and stays with us even when we know better."

"You'd be surprised how fast

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we can move on the surface these days, spacesuit and all," said Selene. "And here, underground, without spacesuits, we can move as quickly as people do on Earth. The slower whip of gravity is made up for by the proper use of muscles."

"But you can move slowly, too." The Earthman was watching the acrobats. They had gone up with speed and were going down with deliberate slowness. They were floating, slapping the hand-holds to delay the drop rather than, as before, to accelerate the rise. They reached the bottom and two others replaced them. And then two more. And then two more. Alternate pairs from each team competed in virtuosity.

Each pair went up in unison—each pair rose and fell in a more complicated pattern. One pair kicked off simultaneously to cross the tube in a low parabola, each reaching the hand-hold the other had abandoned and somehow skimming past the other in midair without touching. That stunt evoked loud applause.

The Earthman said, "I suspect I lack the experience to appreciate the finer points of skill. Are these all native Lunarites?"

"They have to be," said Selene. "The gymnasium is open to all Lunar citizens and some immigrants are fairly good, considering. For this kind of virtuosity, however, you must depend on babies conceived and born here. They have the proper physical adaptation and get the proper childhood training. Most of these performers are under eighteen."

"I imagine it's dangerous—even at Moon's gravity levels."

"Broken bones aren't too uncommon. I don't think there's been an actual death, but I know of at least one case of broken spine and paralysis. That was a terrible accident—I was actually watching—Oh, wait now—we're going to have the ad libs."

"The what?"

"Till now, we've had set pieces. The climbs were according to a fixed pattern."

The percussion beat seemed softer as one climber rose and suddenly launched into midair. He caught a transverse bar one-handed, circled it once vertically and let go.

The Earthman watched closely. He said, "Amazing. He gets around those bars exactly like a gibbon."

"A what?" asked Selene.

"A gibbon. A kind of ape—in fact, the only ape still existing in the wild. They—" He looked at Selene's expression and said, "I don't mean it as an insult, Selene—they are graceful creatures."

Selene said, frowning, "I've seen pictures of apes."

"You probably haven't seen gibbons in motion. I dare say that Earthies might call Lunarites 'gibbons' and mean it insultingly, about on the level of what you mean by 'Earthie.' But I don't mean it so."

He leaned both elbows on the railing and watched the action. It was like dancing in the air. He said, "How do you treat Earth immigrants here on the Moon, Selene? I mean immigrants who mean to stay here for life. Since they lack true Lunarite abilities—"

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"That makes no difference. Immies are citizens. There's no discrimination—no legal discrimination."

"What does that mean? No legal discrimination?"

"Well, you said it yourself. There are some things they can't do. There are differences. The medical problems are different and they've usually had a worse medical history. If they come in middle age they look—old."

The Earthman looked away, embarrassed. "Can they intermarry? I mean, immigrants and Lunarites."

"Certainly. That is, they can interbreed."

"Yes, that's what I meant."

"Of course. No reason why an immigrant can't have some worthwhile genes. Heavens, my father was an Immie, though I'm second-generation Lunarite on my mother's side."

"I suppose your father must have come when he was quite—Oh, good Lord—" He froze at the railing, then drew a shuddering breath. "I thought he was going to miss that bar."

"Not a chance," said Selene. "That's Marco Fore. He likes to reach out at the last moment. Actually it's bad form to do so and a real champion doesn't. Still— My father was twenty-two when he arrived."

"I suppose that's the way. Young enough to be adaptable and without emotional complications linking one to Earth. From the standpoint of the Earthie male, I imagine it must be rather nice to have a sexual attachment with a—"

"Sexual attachment!" Selene's amusement seemed to cover a very real sense of shock. "You don't suppose my father had sex with my mother. If my mother heard you say that, she'd set you right in a hurry."

"But—"

"Artificial insemination, for goodness' sake. Sex with an *Earthman?*"

The Earthman looked solemn. "I thought you said there was no discrimination."

"That's not discrimination. That's a matter of physical fact. An Earthman can't handle the gravity field properly. However practiced he might be—under the stress of passion he might revert. I wouldn't risk it. The clumsy fool might snap his arm or leg or—worse—mine. Gene mixtures are one thing—sex is quite another."

"I'm sorry. Isn't artificial insemination against the law?"

She was watching the gymnastics with absorption. "That's Marco Fore again. When he isn't trying to be uselessly spectacular he really is good—and his sister is almost as good. When they work together it's a poem of motion. Look at them now. They'll come together and circle the same bar as though they had a single body. He's a little too flamboyant at times, but you can't fault his muscular control. Yes, artificial insemination is against Earth's law, but it's allowed for medical reasons—and here that term is pretty broad."

ALL the acrobats had now climbed to the top and were in a great circle just below the

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railing—reds on one side, blues on the other. All arms on the side of the interior were raised and the applause was loud. Quite a crowd had gathered at the rail.

"You ought to have some seating arrangement," said the Earthman.

"Not at all. This isn't a show. This is exercise. We don't encourage any more spectators than can stand comfortably about the railing. We're supposed to be down there, not up here."

"You mean you can do that sort of thing, Selene?"

"After a fashion, of course. Any Lunarite can. I'm not as good as they are. I haven't joined any teams— The melee's going to start now, a free-for-all. This is the really dangerous part. All ten are going to be in the air and each side is going to try to send members of the other side into a fall."

"A real fall?"

"As real as possible."

"Are there injuries occasionally?"

"Occasionally. In theory this sort of thing is frowned upon. Courting injury *is* considered frivolous and we don't have so large a population that we can afford to incapacitate anyone. Still, the melee is popular and we can't raise the votes to outlaw it."

"Which side do you vote on, Selene?"

Selene blushed. "Oh, never mind. You watch this!"

The percussion rhythm had suddenly grown thunderous and each of the individuals in the huge well darted outward like an arrow. There was wild confusion in mid-air, but when the contestants parted again each ended firmly on a grip bar. Next came the tension of waiting. One contestant launched himself. Another followed—and the air was again filled with flashing bodies. Over and over it happened.

Selene said, "The scoring is intricate. There is a point for every launch, a point for every touch, two points for every miss inflicted, ten points for a grounding. And there are various penalties for various kinds of fouling."

"Who keeps the score?"

"Umpires make the preliminary decisions and television tapes are studied in the event of appeals. But often even the tapes can't decide matters."

A sudden excited cry arose when a girl in blue moved past a boy in red and slapped his flank resoundingly. The boy who received the blow had writhed away, but not successfully. Grabbing at a bar with improper balance, he struck the wall ungracefully with his knee.

"Where were his eyes?" demanded Selene indignantly. "He didn't see her coming."

The action grew hotter and the Earthman tired of trying to make sense of the knotted flights. Occasionally a leaper touched a bar and did not retain hold. Those were the times when spectators leaned over the railing as though ready to launch themselves into space.

Once Marco Fore was struck in the wrist and someone cried "Foul!"

Fore missed his hand-hold and fell. To the Earthman's eyes the fall was slow. Fore's lithe body twisted and turned, reaching for bar after bar, without quite making it. The others waited. All maneu-

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vering was suspended during the fall.

Fore was moving quite rapidly now, though twice he had slowed himself without quite being able to maintain a hold.

He was nearly to the ground when a sudden spidery lunge caught a transverse bar with the right leg and he hung suspended and swinging, headdown, about ten feet above the ground. Arms outspread, he paused while the applause rang out, then he twisted upright and jumped into a rapid climb.

The Earthman said, "Was he fouled?"

"If Jean Wong actually grabbed Marco's wrist instead of pushing it, it was a foul. The umpire has ruled a fair block, however, and I don't think Marco will appeal. He fell a lot farther than he had to. He likes these last-minute saves. Some day he'll miscalculate and hurt himself. Oh, oh."

The Earthman looked up in sudden inquiry, but Selene's eyes were not upon him.

She said, "That's someone from the Commissioner's office and he must be looking for you."

"Why?"

"I don't see why he would come here to find anyone else. You're the unusual one."

"But there's no reason—" began the Earthman.

Yet the messenger, who himself had the build of an Earthman or an Earth immigrant and who seemed uneasy under the stares of a couple of dozen slight nude figures who seemed to tint their scorn with indifference, came directly toward him.

"Sir, Commissioner Gottstein requests that you accompany me—"

5

BARRON NEVILLE's quarters were harsher than Selene's. His books were on bold display. His computer outlet was unmasked in one corner and his large desk was in disarray. His windows were blank.

Selene entered, folded her arms and said, "If you live like a slob, Barron, how do you expect your thoughts to be neat?"

"I'll manage," Barron said grumpily. "How is it you haven't brought the Earthman with you?"

"The Commissioner got to him first. The new Commissioner."

"Gottstein?"

"That's right. Why weren't you ready sooner?"

"Because it took time to find out about him. I won't work blind."

Selene said, "Well, then, we'll just have to wait."

Neville bit at a thumbnail and inspected the result severely. "I don't know whether I ought to like the situation or not. What did you think of him?"

"I like him," said Selene definitely. "He was rather pleasant, considering he was an Earthie. He let me guide him. He was interested. He made no judgments. He didn't patronize. And I didn't go out of my way to avoid insulting him, either."

"Did he ask again about the synchrotron?"

She found herself resorting to a

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tactic she normally despised and seldom used—evasion. "He didn't have to."

"Why not?"

"I told him you wanted to see him and I said you were a physicist. So I imagine that when you get together, he'll ask you whatever it is he wants to ask."

"Didn't he think it strange that he should be talking to a female tourist-guide who just happens to know a physicist?"

"Why strange? I said you were my sex partner. There's no accounting for sexual attraction and a physicist may well condescend to a lowly tourist-guide."

"Shut up, Selene."

"Oh, for— Look, Barron, it seems to me that if he were spinning some sort of fancy web—if he approached me because he planned to get to you through me—he would have shown some trace of anxiety. The more complicated and silly any plot, the more rickety it is and the more anxious the plotter. I deliberately behaved casually. I took him to a gymnastics show."

"And?"

"And he was interested. Relaxed and interested. Whatever he has on his mind, it isn't involuted."

"You're sure of that? The Commissioner got to him before I did. You consider that good?"

"Why should I consider it bad? An open invitation to a meeting of some sort delivered in front of a couple of dozen Lunarites isn't particularly involuted, either."

Neville leaned back, hands clasped at the nape of his neck. "Selene, please don't insist on making judgments when I don't ask you to. It's irritating. The man is not a physicist in the first place. Did he tell you he was?"

Selene paused to think. "I called him a physicist. He didn't deny it but I don't recall that he actually said he was. And yet— I'm sure he is."

"It's a lie of omission, Selene. He may be a physicist in his own mind, but the fact is that he isn't trained as a physicist and he doesn't work as one. He has had scientific training, I'll grant, but he has no scientific job of any kind. He couldn't get one. There isn't a lab on Earth that would give him working room. He happens to be on Fred Hallam's crud list and Hallam has been top man there for a long time.

"Are you sure?"

"Believe me, I checked. Didn't you just criticize me for taking so long? And his background sounds so good that it's too good."

"Why too good? I don't see what you're getting at."

"Doesn't it seem to you we ought to trust him? After all, he's got a grievance against Earth."

"You can certainly argue that way—if your facts are right."

"Oh, my facts are right—at least in the sense that they're what turns up, if you dig for background on your Earthie. But maybe we're supposed to argue that way."

"Barron, that's disgusting. How can you weave these conspiracy theories into everything? Ben didn't sound—"

"Ben?" Neville asked sardonically.

"Ben," repeated Selene firmly. "Ben didn't sound like a man with

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a grievance or like a man trying to make me think he sounded like a man with a grievance."

"No, but he managed to make you think he was someone to be liked. You did say you liked him, didn't you? With emphasis? Maybe that's exactly what he was trying to do."

"I'm not that easy to fool and you know it."

"Well, I'll just have to wait till I see him."

"The hell with you, Barron. I've associated with thousands of Earthies of all kinds. It's my job. And you have no reason whatever to speak sarcastically about my judgment. You know you have every reason to trust it."

"All right. We'll see. Don't get angry. It's just that we'll have to wait now. And as long as we must—" He rose lithely to his feet. "Guess what I'm thinking."

"I don't have to." Selene rose as smoothly and with an almost invisible motion of her feet slid sideways, well away from him. "But think it by yourself. I'm not in the mood."

"Are you annoyed because I've impugned your judgment?"

"I'm annoyed because— Oh, hell, why don't you keep your room in better condition?"

And she left.

6

"I WOULD like," said Gottstein, "to offer you some Earthside luxury, Doctor, but I have been allowed to bring none. The good people of the Moon resent the artificial barriers imposed by special treatment for men from Earth. It seems better to soothe their sensibilities by assuming the Lunarite pose as far as possible, though I'm afraid my gait will give me away. Their confounded gravity is impossible."

The Earthman said, "I find this so also. I congratulate you on your new post."

"Not yet quite mine, sir."

"Still, my congratulations. I can't help wondering why you have asked to see me."

"We were shipmates. We arrived not so long ago on the same vessel."

The Earthman waited politely.

Gottstein said, "And my acquaintance with you is a longer one than that. We met briefly some years ago."

The Earthman said quietly, "I'm afraid I don't recall—"

"I'm not surprised. There is no reason for you to remember. Once I was on the staff of Senator Burt, who headed—still heads, in fact—the Committee on Technology and Environment. It was at a time when he was rather anxious to get the goods on Hallam—Frederick Hallam."

The Earthman seemed quite suddenly to sit a little straighter.

"Did you know Hallam?"

"You're the second person to ask me that since my coming to the Moon. Yes, I did. Not intimately. And I've known others who've met him. Oddly enough, their opinion usually coincided with mine. For a person apparently idolized by the planet, Hallam inspired little personal liking on the part of those acquainted with him."

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"Little? None at all, I think," said the Earthman.

Gottstein ignored the interruption. "It was my job at the time—or at least, my assignment from the Senator—to investigate the Electron Pump and see if its establishment and growth were accompanied by undue waste and personal profit-taking. Both were a legitimate concern for what was essentially a watchdog committee, but the Senator was, between us, hoping to find something to damage Hallam. The Senator was anxious to break the stranglehold that man was gaining on the scientific establishment. But the Senator failed."

"That much would be obvious. Hallam today is stronger than ever."

"We discovered no graft to speak of—certainly none that could be traced to Hallam. The man is rigidly honest."

"In that sense he is, I am sure. Power has its own market value, not necessarily measured in credit-bills."

"But what interested me at the time, though it was something I could not then follow up, was that I did come across someone whose complaint was not against Hallam's power but against the Electron Pump itself. I was present at the interview although I did not conduct it. You were the complainant, were you not?"

The Earthman said cautiously, "I remember the incident, but I still don't remember you."

"I wondered then how anyone could possibly object to the Electron Pump on scientific grounds. You impressed me sufficiently for something to stir when I saw you on the ship—and eventually the memory came back. I have not referred to the passenger list but let me check my powers of recall. Aren't you Dr. Benjamin Andrew Denison?"

The Earthman sighed. "Benjamin Allan Denison. Yes. But why does this come up now? The truth is, Commissioner, I don't want to drag up the past. I'm here on the Moon and anxious to make a new start. Damn it, I considered changing my name."

"That wouldn't have helped. It was your face I recognized. I have no objection to your new life, Dr. Denison. I would not in any way interfere. But I would like to pry a little for reasons that do not directly involve you. I don't remember, quite, your objection to the Electron Pump. Could you enlighten me?"

DENISON'S head bent. The silence lengthened and Gottstein did not interrupt. He even stifled a small clearing of the throat.

Denison said, "Truly, it was nothing. It was a guess I made—a fear about the alteration in the intensity of the strong nuclear field. Nothing!"

"Nothing?" Gottstein did clear his throat now. "Please don't mind if I strive to understand this. I told you that you interested me at the time. I was unable to follow up your theories then and I doubt that I could dig the information out of the records now. The whole thing is classified—the Senator did very

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poorly at the time and he isn't interested in publicity about the matter. Still, some details come back. You were once a colleague of Hallam's—though not a physicist—"

"That's right. I was a radiochemist. So was he."

"Stop me if I remember incorrectly, but your early record was exceptional, right?"

"There were objective criteria in my favor. I had no illusions about myself. I was a brilliant worker."

"Amazing how it comes back. Hallam, on the other hand, was not."

"Not particularly."

"But afterward things did not go well with you. In fact, when we interviewed you—I think you volunteered to see us—you were working for a toy manufacturer."

"Cosmetics," said Denison in a strangled voice. "Male cosmetics. My occupation didn't help gain me a respectful hearing."

"No, it wouldn't. I'm sorry. You were a salesman."

"Sales manager. I was still brilliant. I rose to vice-president before breaking off and coming to the Moon."

"Did Hallam have something to do with that? I mean with your leaving science?"

"Commissioner," said Denison, "please—it really doesn't matter any longer. I was there when Hallam first discovered the tungsten conversion and when the chain of events began that led to the Electron Pump. Exactly what would have happened if I had not been there, I can't say. Hallam and I might both have been dead of radiation poisoning a month later or of a nuclear explosion six weeks later. I don't know. But I was there and Hallam is what he is now, partly because of me. And because of my part in whatever he is—I am what I am now. The hell with the details. Does that satisfy you? Because it will have to."

"I certainly had no affection for him in those days. I have no affection for him now, for that matter."

"Would you say that your objection to the Electron Pump was inspired by your anxiety to destroy Hallam?"

"I object to this cross-examination."

"Please! What I ask is not intended to be used against you. The information is for my own benefit. I am concerned about the Pump and about a number of things."

"Well, then—I suppose you might work out some emotional involvement. Because I disliked Hallam I was ready to believe that his popularity and prestige had a false foundation. I thought about the Electron Pump, hoping to find a flaw."

"And you therefore found one?"

"No," said Denison forcefully. "Not 'therefore.' I found a flaw, but the finding was honest. I did *not invent a flaw* merely to puncture Hallam."

"No question of inventing, Doctor," said Gottstein soothingly. "I wouldn't dream of any such implication. Yet we both know that in trying to determine something on the boundary lines of the known, it is necessary to make

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assumptions. The assumptions can be made over a gray area of uncertainty so that one can shade them in one direction or another with perfect honesty, but in accord with—uh—the emotions of the moment. You made your assumptions, perhaps, on the anti-Hallam edge of the possible."

"This is a profitless discussion, sir. At the time I thought I had a valid point. However, I am not a physicist. I am—was—a radiochemist."

"Hallam was a radiochemist, too, but he is now the most famous physicist in the world."

"He's still a radiochemist. A quarter-century out of date."

"Not so you. You worked hard to become a physicist."

Denison smoldered. "You really investigated me!"

"I told you—you impressed me. Amazing how it comes back. But now I'll pass on to something a little different. Do you know a physicist named Peter Lamont?"

Reluctantly Demison nodded.

"Would you say he is brilliant?"

"I don't know him well enough to pass judgment."

"Would you say he knew what he was talking about."

"Barring information to the contrary, yes, I would say so."

THE Commissioner carefully leaned back in his seat. It had a spindly look about it and by Earth standards it would not have supported his weight. He asked, "Would you care to tell me how you came to know Lamont? Was it by reputation only? Did you meet?"

"We had some direct conversations. He was planning to write a history of the Electron Pump and how it started—a full account of all the legendary crap that's grown around it. I was flattered that Lamont came to me—that he seemed to have found out something about me. Damn it, Commissioner, I was flattered that he knew I was alive. But I couldn't really say much. What would have been the use? I would have gained nothing but some sneers and I am tired of those—tired also of brooding and self-pity."

"Do you know anything about what Lamont has been doing in the last few years?"

"What is it you're thinking of, Commissioner?" asked Denison cautiously.

"About a year ago, maybe a little more, Lamont spoke to Burt. I am not on the Senator's staff any longer but we see each other occasionally. He talked to me about it. He was concerned. He thought Lamont might have made a valid point against the Electron Pump and yet could see no practical way of pursuing the matter. I, too, was concerned—"

"Concern everywhere," said Denison sardonically.

"But now I wonder. If Lamont talked to you and—"

"Stop. Stop right there, Commissioner. I think I see you sidling toward a point and I don't want you to move any further. If you expect me to tell you that Lamont stole my idea—that once again I am being treated badly—you are wrong. Let me tell you as forcefully as I can—I had no valid

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theory. Mine was purely a guess. It worried me. I presented it. I was not believed—I became discouraged. I gave up. I did not mention my guess in my discussion with Lamont—we never covered ground beyond the early days of the Pump. What he came up with later, however much it may have resembled my guess, was arrived at independently. His idea seems much more solidly founded than mine and to be based on rigid mathematical analysis. I lay claim to no priority."

"You seem to know about Lamont's theory."

"It made the rounds in recent months. The fellow can't publish and no one takes him seriously, but it was passed along the grapevine. It even reached me."

"I see, Doctor. But I take Lamont seriously. To me the warning was second time around, you understand. The report of the first warning—yours—had never reached the Senator. It had nothing to do with financial irregularities, which were then on his mind. The actual head of the investigating panel—not myself—considered it (you will forgive me) crackpot. I did not. When the matter came up again I grew disturbed. It was my intention to meet with Lamont, but a number of physicists whom I consulted—"

"Including Hallam?"

"No; I did not talk to Hallam. But a number of those I consulted advised me that Lamont's work was utterly without foundation. Even so, I was considering seeing him when I was asked to take this position. And here I am—and here you are. So you can understand why I wanted to meet you. In your opinion, is there merit in the theories advanced by yourself and Dr. Lamont?"

"You mean is continued use of the Electron Pump going to blow up the sun, or maybe the entire arm of the galaxy?"

"Yes, that's exactly what I mean."

"How can I tell? All I have is my own guess, which is just a guess. As for Lamont's theory, I have not studied it in detail—it has not been published. If I saw it, the mathematics might be beyond me. Besides, what's the difference? Lamont won't convince anyone. Hallam has ruined him as earlier he ruined me and the public generally would find it against their short-term interest to believe him even if he went over Hallam's head, so to speak. The world doesn't want to give up the Pump—and it's a lot easier to refuse to accept Lamont's theory than to try to do something about it."

"But you're still concerned about the possibilities, aren't you?"

"In the sense that I think that we might indeed destroy ourselves and that I wouldn't like to see that happen, of course."

"So you've come to the Moon, now, to do something that Hallam, your old enemy, would prevent your doing on Earth."

Denison said slowly, "You, too, like to make guesses."

"Do I? Perhaps I am brilliant, too. Is my guess correct?"

"It may be. I haven't given up hope of returning to science. If

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anything I do were to lift the specter of doom from mankind, either by showing that it does not exist or that it does exist and must be eliminated, I would be pleased."

"I see. Dr. Denison, to discuss another point at the moment—my predecessor, the retiring Commissioner, Mr. Montez, tells me that the growing edge of science is here on the Moon. He seems to think a disproportionate quantity of the brains and initiative of mankind is here."

"He may be right," said Denison. "I don't know."

"Doesn't it strike you that his being right might be inconvenient for your purpose? Whatever you do, men may say and think it was accomplished through the Lunar scientific structure. You personally might gain little in the way of recognition, however valuable the results you were to present. Which, of course, would be unjust."

"I am tired of the rat-race of credits, Commissioner Gottstein. I want some interest in life, more interest than I can find as Vice President in charge of Ultrasonic Depilatories. I'll find it in a return to science. If I accomplish something in my own eyes, I will be satisfied."

"Let us say that that would be insufficient for me. What credit you earn, you should receive—and it should be quite possible for me, as Commissioner, to present the facts to the Terrestrial community in such a way as to preserve for you what is yours. Surely you are human enough to want what is your own."

"You are kind. And in return?"

"You are cynical. But justly so. In return I want your help. The retiring Commissioner, Mr. Montez, is not certain as to the lines of scientific research being undertaken on the Moon. Communications between the peoples of Earth and Moon are not perfect, yet coordination of the efforts on both worlds would clearly benefit all. It is understandable that there should be distrust, I suppose, but anything you can do to break down that distrust would be as valuable to us as your scientific findings might be."

"Surely, Commissioner, you can't feel that I'm the ideal man to bear witness to the Lunarites as to how fair-meaning and well-disposed the Earth's scientific establishment is."

"You mustn't confuse one vengeful scientist with the men of Earth as a whole, Dr. Denison. Let's put it this way. I would appreciate being kept aware of your scientific findings so that I could help you retain your fair share of credit. And in order to understand your findings properly—I am not a professional scientist myself, remember—it would be helpful if you would explain them in the light of the present state of science on the Moon. Is it agreed?"

Denison said, "You ask a hard thing. Preliminary results, prematurely disclosed—whether through carelessness or overenthusiasm—can do tremendous harm to a reputation. I would hate to talk about anything to anyone until I am sure of my ground. My earlier experience with the committee on which you served would

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certainly encourage me to preserve silence."

"I quite understand," said Gottstein heartily. "I would leave it to you to decide when I might usefully be informed. Now I have kept you late and you probably want to sleep—"

Which was dismissal. Denison left, Gottstein looking after him thoughtfully.

7

DENISON opened the door by hand. There was a contact that would have opened it automatically, but in the blur of waking he could not find it.

The dark-haired man—with a face that was somehow scowling in repose—said, "I'm sorry. Am I early?"

Denison repeated the last word to give himself time to absorb matters. "Early? No. I—I'm late, I think."

"I called. We made an appointment."

And now Denison had it. "Yes. You're Dr. Neville."

"That's right. May I come in?"

He stepped in. Denison's room was small and held a rumpled bed that took up most of the available space. The ventilator was sighing softly.

Neville said with meaningless courtesy, "Slept well, I hope?"

Denison looked down at his pajamas and passed a hand over his rumpled hair. "No," he said abruptly. "I had an abominable night. May I be excused long enough to make myself more presentable?"

"Of course. Would you like to have me prepare breakfast meanwhile? You may be unacquainted with the equipment."

"It would be a favor," said Denison.

He emerged some twenty minutes later, washed and shaved, wearing trousers and an undershirt.

He said, "I trust I didn't break the shower. It went off and I couldn't turn it on again."

"The water's rationed. You get only so much. This is the Moon, Doctor. I've taken the liberty of preparing scrambled eggs and hot soup for the two of us."

"Scrambled—"

"We call it that. Earthmen wouldn't, I suppose."

Denison said, "Oh?" He sat down with something less than enthusiasm and tasted the pasty yellow mixture. He tried not to make a face at the first taste and then manfully swallowed it and dug in for a second forkful.

"You'll get used to it with time," said Neville, "and it's highly nourishing. I might warn you that the high-protein content and the low gravity will cut your needs for food."

"Just as well," said Denison, clearing his throat.

Neville said, "Selene tells me that you intend to stay on the Moon."

Denison said. "That was my intention." He rubbed his eyes. "I've had a terrible night, though. It tests my resolution."

"How many times did you fall out of bed?"

"Twice. I take it that the problem is a common one."

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"For men of Earth, invariably. Awake, you can make yourself walk with due regard for the Moon's gravity. Asleep, you toss as you would on Earth. But at least falling is not painful at low gravity."

"The second time I slept on the floor a while before waking. Didn't remember falling. What the hell do you do about it?"

"You mustn't neglect your periodic checks on heartbeat, blood pressure and so on, just to make sure the gravity change isn't introducing too much strain."

"I've been amply warned of that," said Denison with distaste. "In fact, I have fixed appointments for the next month. And pills."

"Well," said Neville, as if dismissing a triviality, "within a week you'll probably have no trouble at all. And you'll need proper clothing. Those trousers will never do and that flimsy upper garment serves no purpose."

"I presume there's some place I can buy clothes."

"Of course. If you can get her when she's off duty, Selene will be glad to help you, I'm sure. She assures me you're a decent sort, Doctor."

"I'm delighted she thinks so." Denison, having swallowed a spoonful of the soup, looked at it as though wondering what to do with the rest. Grimly he continued the task of downing it.

"She judged you to be a physicist, but of course she's wrong."

"I was trained as a radiochemist."

"You haven't worked at that either for a long time, Doctor. We may be out of it up here, but we're not that far out of it. You're one of Hallam's victims."

"Are there so many you speak of them as a group?"

"Why not? The whole Moon is one of Hallam's victims."

"The Moon?"

"In a manner of speaking."

"I don't understand."

"We have no Electron Pump stations on the Moon. None have been established because there has been no cooperation from the para-Universe. No samples of tungsten have been accepted."

"Surely, Dr. Neville, you don't intend to imply that this is Hallam's doing."

"In a negative way, yes. Why must only the para-Universe be able to initiate a Pump station? Why can't we?"

"As far as I know, we lack the knowledge to take the initiative."

"And we will continue to lack the knowledge if research into the matter is forbidden."

"Is it forbidden?" Denison asked with a faint note of surprise.

"In effect. If none of the work necessary to expand knowledge in that direction finds adequate priorities at the proton synchrotron or at any of the other large installations—all controlled by Earth and all under the influence of Hallam—then the research is effectively forbidden."

DENISON yawned. "I suspect I will have to sleep again before long. I beg your pardon—I did not mean to imply you were boring me. But tell me, is the Electron Pump so important to the Moon? Surely the solar batteries

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are effective and sufficient."

"They tie us to the sun, Doctor. They tie us to the surface."

"Well— But why does Hallam take this adverse interest in the matter, do you suppose, Dr. Neville?"

"You know better than I if you know him personally, as I do not. He prefers not to make it clear to the public generally that the entire Electron Pump establishment is the product of the paramen, with ourselves merely servants of the masters. And if, on the Moon, we advance to the point where we ourselves know what we are doing, then the birth of the true Electron Pump technology will date from our moment, not from his."

Denison said, "Why do you tell me all this?"

"To avoid wasting my time. Ordinarily we welcome physicists from Earth. We feel cut off here on the Moon, victims of deliberate Terrestrial policy against us, and a physicist visitor can be helpful, even if only to give us a feeling of lesser isolation. A physicist immigrant is even more helpful and we like to explain the situation to him and encourage him to work with us. I am sorry that you are not, after all, a physicist."

Denison said impatiently, "But I never said I was."

"And yet you asked to see the synchrotron. Why?"

"Is that really what's bothering you. My dear sir, let me try to explain. My scientific career was ruined half a lifetime ago. I have decided to seek some sort of rehabilitation, some sort of renewed meaning to my life as far away from Hallam as I can get— which means here on the Moon. I was trained as a radiochemist, but that has not permanently paralyzed me as far as any other field of endeavor is concerned. Para-physics is the great field of today and I have done my best to self-educate myself there, feeling that this will offer me my best hope for rehabilitation."

Neville nodded dubiously.

"By the way, since you mentioned the Electron Pump— Have you heard anything about the theories of Peter Lamont?"

Neville eyed the other narrowly. "No. I don't think I know the man."

"He is not yet famous. And probably never will be—chiefly for the same reason I'll never be. He crossed Hallam. His name came up recently and I've been giving him some thought. It was one way of occupying the sleepless portion of last night." He yawned again.

Neville said impatiently, "Yes, Doctor? What of this man?"

"He has some interesting thoughts on para-theory. He believes that with continued use of the Pump, the strong nuclear interaction will grow basically more intense in the solar system— causing the sun to slowly heat up and, at some crucial point, undergo a phase change that will produce an explosion."

"Nonsense. Do you know the amount of change produced on a cosmic scale by any use of the Pump on a human scale? Even granted that you are only self-

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educated in physics, you should have no difficulty in seeing that the Pump can't possibly make any appreciable change in Universe conditions during the lifetime of the solar system."

"Do you think that?"

"Of course. Don't you?"

"I'm not sure. Lamont's grinding a personal axe. I've met him briefly and he impressed me as an intense and very emotional fellow. Considering what Hallam has done to him, he is probably driven by overwhelming anger."

Neville frowned. "Are you sure he is on the outs with Hallam?"

"I'm an expert on the subject."

"It doesn't occur to you that the initiation of that kind of doubt—that the Pump is dangerous—might be used as merely another device to keep the Moon from developing Pumps of its own?"

"At the cost of creating universal alarm and despondency? Of course not. That would be cracking walnuts with nuclear explosions. No, I'm sure Lamont is sincere. In fact, in my own bumbling way I had similar notions once."

"Because you, too, are driven by hate for Hallam."

"I'm not Lamont. I imagine I don't react the same way he does. In fact, I had some dim hope I would be able to investigate the matter on the Moon, without Hallam's interference and without Lamont's emotionalism."

"Here on the Moon?"

"Here on the Moon. I thought perhaps I might get the use of the synchrotron."

"And that was your interest in it?"

Denison nodded.

Neville said, "You really think you will get the use of the synchrotron? Do you know how far back the priorities have piled up?"

"I thought perhaps I might get the cooperation of some of the Lunar scientists."

Neville laughed and shook his head. "We have almost as little chance at the synchrotron as you. However, I'll tell you what we can do. We have established laboratories of our own. We can give you space--we might even have some minor instrumentation for you. How useful our facilities would be to you I can't say, but you might be able to do something."

"Do you suppose you would have any means of making observations useful to para-theory?"

"It would depend partly on your ingenuity, I guess. Do you expect to prove the theories of this man, Lamont?"

"Or disprove them. Perhaps."

"You'll disprove them, if anything I have no fears about that."

Denison said, "It's quite clear, isn't it, that I'm not a physicist by training? Why do you so readily offer me working space?"

"Because you're from Earth. I told you we value that—and perhaps your self-education as a physicist will be of additional value. Selene vouches for you, something I attach more importance to than I should, perhaps. And we are fellow-sufferers at the hands of Hallam. If you wish to rehabilitate yourself, we will help you."

"But pardon me if I am cynical. What do you expect to get out of it?"

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"Your help. There is a certain amount of misunderstanding between the scientists of the Earth and the Moon. You are a man of Earth who has come voluntarily to the Moon and you could act as a bridge between us to the benefit of both. You have already had contact with the new Commissioner and it may be possible that, as you rehabilitate yourself, you will rehabilitate us as well."

"You mean that if what I do weakens Hallam's influence, Lunar science will benefit?"

"Whatever you accomplish is sure to be useful. But perhaps I ought to leave you to catch up with your sleep. Call on me during the next couple of days and I will see about placing you in a laboratory. And—" he looked about, "getting you somewhat more comfortable quarters."

They shook hands and Neville left.

8

GOTTSTEIN said, "I suppose that, however annoying this position may have become for you, you are leaving it today with a small pang."

Montez shrugged eloquently. "A very large pang, when I think of the return to full gravity. The difficulty of breathing—the aching feet—the perspiration. I'll be in a bath of perspiration constantly."

"It will be my turn some day."

"Take my advice. Never stay here longer than two months at a time. I don't care what the doctors tell you or what kind of isometric exercises they put you through—get back to Earth every sixty days and stay at least a week. You've got to keep the feel of it."

"I'll bear that in mind. Oh, I've been in touch with my friend."

"Which friend is that?"

"The man who was on the vessel with me when I came in. I thought I remembered him and I did. He's Denison—a radiochemist. What I recalled about him was accurate enough."

"Ah?"

"What I actually remembered was a certain interesting irrationality of his and I tried to probe it. He resisted in quite shrewd fashion. He sounded rational—so rational, in fact, that I grew suspicious. His is a kind of attractive rationality developed by certain types of crackpots as a defense mechanism."

"Oh, Lord," said Montez, clearly harassed. "I'm not sure I follow you. I'm going to sit down for a moment. Between trying to determine whether everything is properly packed and thinking about Earth's gravity—I'm out of breath. What kind of irrationality masquerades as rationality?"

"He tried to tell us once that there was danger in the use of the Electron Pumps. He thought the process would blow up the Universe."

"Indeed? And will it?"

"I hope not. At the time his ideas were dismissed rather brusquely. When scientists work on a subject at the limit of understanding they grow edgy, you know. I knew a psychiatrist once who called it the 'Who knows?' phenomenon. If nothing you do will give you the knowledge you need,

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you end by saying, 'Who knows what will happen?' and imagination tells you."

"Yes, but if physicists go around saying such things, even a few of them—"

"But they don't. Not officially. There's such a thing as scientific responsibility and the journals are careful not to print nonsense. Or what they consider nonsense. Actually, you know, the subject's come up again. A physicist named Lamont spoke to Senator Burt, also to that self-appointed environmental messiah, Chen, and a few others. He also insists on the possibility of cosmic explosion. No one believes him but the story spreads in a thin sort of way and gets better with the retelling."

"And this man here on the Moon believes it."

Gottstein smiled broadly. "I suspect he does. Hell, in the middle of the night when I have trouble sleeping—I keep falling out of bed, by the way—I believe it myself. He probably hopes to test the theory experimentally—here."

"Well?"

"Well, let him. I hinted we would help him."

Montez shook his head. "That's risky. I don't like official encouragement of crackpot notions."

"It's just barely possible they may not be entirely crackpot, but that's not the point. The point is that if we can get him established here on the Moon we may find out, through him, what's going on here. He's anxious for rehabilitation and I hinted that rehabilitation would come through us if he cooperated. I'll see to it that you are discreetly kept posted. As between friends, you know."

"Thank you," said Montez. "And goodbye."

9

NEVILLE chafed. "No. I don't like him."

"Why not? Because he's an Earthie?" Selene brushed a bit of fluff from her right breast, caught it and studied it critically. "That's not from my blouse. I tell you the air recirculation is abominable."

"This Denison is worthless. He is not a para-physicist. He's a self-educated man in the field, he says, and proves it by coming here with ready-made, damn-fool notions."

"Like what?"

"He thinks the Electron Pump is going to explode the Universe."

"Did he say that?"

"I know he thinks that. Oh, I'm aware of the arguments. I've heard them often enough. But it's not so, that's all."

"Maybe," said Selene, raising her eyebrows, "you just don't want it to be so."

"Don't *you* start."

There was a short pause. Selene said, "Well, what will you do with him?"

"I'll give him a place to work. He may be worthless as a scientist, but he'll have his uses just the same. He'll be conspicuous enough—the Commissioner has already been talking to him."

"I know."

"Well, he has a romantic history—a man with a wrecked career

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trying to rehabilitate himself."

"Really?"

"Really. I'm sure you'll love it. Ask him to tell you. It's a point in his favor. A romantic Earthman working on the Moon on a crackpot project will make a perfect object to preoccupy the Commissioner. And through Denison—who knows?—we might just possibly get a better idea of what's really happening on Earth. You'd better continue to be friendly with him, Selene."

10

SELENE laughed. The sound was metallic in Denison's earpiece. Her figure was lost in the spacesuit she wore.

She said, "Come on, Ben, there's no reason to be afraid. You're an old hand by now—you've been here a month."

"Twenty-eight days," mumbled Denison. He felt smothered in his suit.

"A month," insisted Selene. "It was well past half-Earth when you came and it's well past half-Earth now." She pointed to the brilliant curve of the Earth in the southern sky.

"Wait. I'm not as brave out here as I am underground. What if I fall?"

"What if you do? The gravity is weak by your standards. The slope is gentle and your suit is strong. If you fall, just let yourself slide and roll. It's almost as much fun that way."

Denison looked about doubtfully. The Moon lay beautiful in the cold light of the Earth. The surface was black and white—a delicate white compared with the sunlit views he had seen when he had taken a trip a week before to inspect the solar batteries that stretched from horizon to horizon along the floor of Mare Imbrium. And the black was somehow softer, too, through lack of the blazing contrast of true day. The stars were supernally bright and the Earth—the Earth—was infinitely inviting with its swirls of white on blue and its peeping glimpse of tan.

He asked, "Do you mind if I hang on to you?"

"Of course not. And we won't go all the way up. It will be the beginner's slope for you. Just try to keep in time with me. I'll move slowly."

Her steps were long, slow and swinging. He tried to keep his in synch. The up slope was dusty—with each step he kicked up a fine powder that settled quickly in the airlessness. He matched her stride for stride, but with an effort.

"Good," said Selene, her arm locked in his, steadying him. "You're very good for an Earthie—no, I ought to say Immie—"

"Thank you."

"That's not much better, I suppose. Immie for immigrant is as insulting as Earthie for Earthman. Shall I just say you're simply very good for a man your age?"

"No—that's much worse." Denison was gasping a little and he could feel his forehead moistening.

Selene said, "Each time you reach the point where you're about to put your foot down, give a little

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push with your other foot. That will lengthen your stride and make it all the easier. Watch me."

Denison paused thankfully and watched Selene, slim and graceful despite the grotesquerie of the suit, take off in low, loping leaps. She returned and kneeled at his feet.

"Now you take a slow step, Ben, and I'll hit your foot when I want it to shove."

They tried several times. Finally Denison said, "That's worse than running on Earth. I'd better rest."

"It's just that your muscles aren't used to the proper coordination. You're fighting yourself, not gravity. Well, sit down and catch your breath. I won't take you up much farther."

Denison said, "Will I do any damage to the pack if I lie down on my back?"

"No, but it's not a good idea. Not on the bare ground. It's at a hundred and twenty degrees absolute—hundred and fifty below zero, if you prefer—and the smaller the area of contact the better. I'd sit down."

"All right." Denison sat with a grunt. Deliberately he faced away from the Earth. "Look at those stars!"

Selene sat facing him at right angles. He could see her face dimly through the faceplate when the Earthlight caught it at the proper angle.

She said, "Don't you see the stars on Earth?"

"Not like this. The air on Earth absorbs some of the light even when there are no clouds. Temperature differences in the atmosphere make them twinkle and city lights, even distant city lights, wash them out."

"Sounds disgusting."

"Do you like it out here, Selene? On the surface?"

"I'm not really crazy about it, but I don't mind it too much now and then. It's part of my job to bring tourists out here, of course."

"And now you have to do it for me."

"Can't I convince you it's not the same thing at all, Ben? We've got a set route for the tourists. It's very tame, very uninteresting. You don't think we'd take them out here to the slide, do you? This is for Lunarites—and Immies. Mostly Immies, actually."

"It can't be very popular. No one's here but us."

"Oh, well. There are particular days for this sort of thing. You should see this place on race days. You wouldn't like it then, though."

"I'm not sure I like it now. Is gliding a sport for Immies?"

"Rather. Lunarites generally don't like the surface."

"How about Dr. Neville?"

"You mean, how does he feel about the surface?"

"Yes."

"I don't think he's ever been up here. He's a real city boy. Why do you ask?"

"Well, when I asked permission to go along on the routine servicing of the solar batteries he was perfectly willing to have me go, but he wouldn't go himself. I asked him to come so I would have someone to answer my questions. His refusal was rather strong."

"I hope you found someone else to answer your questions."

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"Oh, yes. He was an Immie, come to think of it. Maybe that explains Dr. Neville's attitude toward the Electron Pump."

"What do you mean?"

"Well—" Denison leaned back and kicked up his legs alternately, watching them rise and fall slowly with a certain lazy pleasure. "Hey, that's not bad. Look, Selene—What I mean is that Neville is intent on developing a Pump Station on the Moon although the solar batteries are quite adequate for the job. We couldn't use solar batteries on the Earth, where the sun is not as unfailing, as constant, as bright, as radiant in all wavelengths. There's not a single planetary body in the solar system, no body of any size, that is more suitable for the use of the batteries than the Moon is. Even Mercury is too hot. But the use does tie you to the surface, and if you don't like the surface—"

SELENE rose to her feet suddenly and said, "All right, Ben, you've rested enough. Up! Up!"

He struggled to his feet and said; "A Pump on the Moon, however, would mean that no Lunarite would ever have to come out on the surface if he didn't want to."

"Uphill we go, Ben. We'll go to that ridge ahead. See it, where the Earthlight cuts off in a horizontal line?"

They made their way up the final stretch silently. Denison was aware of the smoother area to one side of his path—a wide swath of slope from which most of the dust had been brushed.

"That's too smooth for a beginner to work up," Selene said, answering his thoughts. "Don't get too ambitious or you'll want me to teach you the kangaroo-hop next."

She made a kangaroo-hop as she spoke, turned about-face almost before landing and said, "Right here. Sit down and I'll adjust—"

Denison did, facing downhill. He looked down the slope uncertainly. "Can you really glide on it?"

"Of course. The gravity is so much weaker on the Moon than on the Earth that you press against the ground much less strongly. That means there is much less friction. Everything is more slippery on the Moon than on the Earth. That's why the floors in our corridors and apartments seemed unfinished to you. Would you like to hear me give my little lecture on the subject? The one I give the tourists?"

"No, Selene."

"Besides, we're going to use gliders, of course." She had a small cartridge in her hand. Clamps and a pair of thin tubes were attached to it.

"What is that?" asked Ben.

"Just a small liquid-gas reservoir. It will emit a jet of vapor just under your boots. The thin gas layer between boots and ground will reduce friction virtually to zero. You'll move as though you were in clear space."

Denison said uneasily, "I disapprove. Surely it's wasteful to use gas in this fashion on the Moon."

"Oh? What gas do you think we use in these gliders? Carbon

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dioxide? Oxygen? This is waste gas to begin with. It's argon. It comes out of the Moon's soil in ton lots, formed by the billions of years of breakdown of potassium-40. That's part of my lecture, too, Ben. The argon has only a few specialized uses on the Moon. We could use it for gliding for a million years without exhausting the supply. All right. Your gliders are on. Now wait till I put on mine."

"How do they work?"

"It's quite automatic. You just start sliding and that will trip the contact and start the vapor. You've got only a few minutes' supply but that's all you'll need."

She stood up and helped him to his feet. "Face downhill. Come on, Ben, this is a gentle slope. Look at it. It looks nearly level."

"No, it doesn't," said Denison sulkily. "It looks like a cliff to me."

"Nonsense. Now listen to me and remember what I told you. Keep your feet about six inches apart and one just a few inches ahead of the other. It doesn't matter which one is ahead. Keep your knees bent. Don't lean into the wind because there isn't any. Don't try to look up or back, but you can look from side to side if you have to. Most of all, when you finally hit level don't try to stop too soon —you'll be going faster than you think. Just let the glider expire and then friction will bring you to a slow halt."

"I'll never remember all that."

"Yes, you will. And I'll be right at your side to help. And if you do fall and I don't catch you—don't try to do anything. Just relax and let yourself tumble or slide. There are no boulders anywhere that you can collide with."

DENISON swallowed and looked ahead. The slide was gleaming in Earthlight. Minute unevennesses caught more than their share of light, leaving tiny uphill patches in darkness so that there was a vague mottling of the surface. The bulging half-circle of Earth rode the black sky almost directly ahead.

"Ready?" Selene's gauntleted hand was between his shoulders.

"Ready," said Denison faintly.

"Then off you go," she said. She pushed and Denison felt himself begin to move. He moved quite slowly at first. He turned toward her, wobbling, and she said, "Don't worry. I'm right at your side."

He could feel the ground beneath his feet—and then he could not. The glider had been activated.

For a moment he felt as though he were standing still. There was no push of air against his body, no feel of anything sliding past his feet. But when he turned toward Selene again, he noticed that the lights and shadows to one side were moving backward at a slowly increasing speed.

"Keep your eyes on the Earth," Selene's voice said in his ear, "Till you build up speed. The faster you go the more stable you'll be. Keep your knees bent. You're doing very well, Ben."

"For an Immie," gasped Denison.

"How does it feel?"

"Like flying," he said. The pattern of light and dark on either side was moving backward in a

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blur. He looked briefly to one side, then the other, trying to convert the sensation of a backward flight of his surroundings into one of a forward flight of his own. As soon as he succeeded he found he had to look forward at the Earth hastily to regain his sense of balance. "I suppose that's not a good comparison to use with you. You have no experience of flying on the Moon."

"Now I know, though. Flying must be like gliding—I know what that is."

She was keeping up with him easily.

Denison was now going fast enough for him to get a sensation of motion even when he looked forward. The Moonscape ahead was opening before him and flowing past on either side. He said, "How fast do you get to go in a glide?"

"A good race," said Selene, "has been clocked at speeds in excess of a hundred miles an hour—on steeper slopes than this one, of course. You'll probably reach a top of thirty-five."

"It feels a lot faster than that."

"Well, it isn't. We're leveling off now, Ben, and you haven't fallen. Just hang on—the glider will die out and you'll feel friction. Don't do anything to help it. Just keep going."

Selene had barely completed her remarks when Denison felt the beginning of pressure under his boots. There was at once an overwhelming sensation of speed and he clenched his fists hard to keep from throwing his arms up in an almost reflex gesture against the collision that was not going to happen. He knew that if he threw up his arms, he would go over backward.

He narrowed his eyes, held his breath till he thought his lungs would explode, and then Selene said, "Perfect, Ben, perfect. I've never known an Immie to go through his first slide without a fall—so if you do fall, there'll be nothing wrong. No disgrace."

"I don't intend to fall," whispered Denison. He caught a large, ragged breath and opened his eyes wide. The Earth was as serene as ever, as uncaring. He was moving more slowly now—more slowly—more slowly . . .

"Am I standing still now, Selene?" he asked. "I'm not sure."

"You're standing still. Don't move. You've got to rest before we make the trip back to town. Damn it, I left it somewhere around here when we came up."

DENISON watched her in disbelief. She had climbed up with him, had glided down with him. Yet he was half-dead with weariness and tension and she was in the air with long kangaroo-leaps. She seemed a hundred yards away when she said, "Here it is—" and her voice was as loud in his ears as when she had stood next to him.

She was back in a moment with a folded sheet of plastic under her arm.

"Remember," she said cheerily, "when you asked what it was on our way up and I said we'd be using it before we came down?" She unfolded it and spread it on the dusty surface of the Moon. "A

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Lunar Lounge is its full name, but we just call it a lounge. We take the adjective for granted on this world." She inserted a cartridge and tripped a lever.

It began to fill. Denison had expected a hissing noise, but of course there was no air.

"Before you question our conservation policies again," said Selene, "this also is argon."

The plastic blossomed into a mattress on six stubby legs. "It will hold you," she said. "It makes very little actual contact with the ground and the vacuum all around will conserve its heat."

"Don't tell me it's hot—"

"The argon is heated as it pours in, but only relatively. It ends up at two hundred seventy degrees absolute, almost warm enough to melt ice and quite warm enough to keep your insulated suit from losing heat faster than you can manufacture it. Go ahead. Lie down."

Denison did so with a sensation of enormous luxury.

"Great," he said, sighing.

"Mama Selene thinks of everything," she said.

She came from behind him now, gliding around him, her feet placed heel to heel as though she were on skates. She let the feet fly out from under her as she came down gracefully on hip and elbow on the ground just beside him.

Denison whistled. "How did you do that?"

"Lots of practice. And don't you try it. You'll break your elbow. I warn you, though. If I get too cold I'm going to have to crowd you on the lounge."

"Safe enough," he said, "with both of us in suits."

"Ah, there speaks my brave lecher. How do you feel?"

"All right, I guess. What an experience!"

"What an experience? You set a record for non-falls. Do you mind if I tell the folks back in town about this?"

"No. Always like to be appreciated. You're not going to expect me to do this again, are you?"

"Right now? Of course not. I wouldn't, myself. We'll just rest a while—make sure your heart action is back to normal—and then we'll go back. If you'll reach your legs in my directon, I'll take your gliders off. Next time I'll show you how to handle the gliders yourself."

"I'm not sure there will be a next time."

"Of course there will. Didn't you enjoy it?"

"A little. Between terrors."

"You'll know fewer terrors next time and still less the time after. Eventually you'll experience just the enjoyment, and I'll make a racer out of you."

"No, you won't. I'm too old."

"Not on the Moon. You just look old."

DENISON could feel the ultimate quiet of the Moon soaking into him as he lay there. He once more faced the Earth. Its steady presence in the sky had, more than anything else, given him the sensation of stability during his recent glide and he felt grateful to it.

"Do you often come out here,

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Selene? I mean, by yourself or with just one or two others? You know, when it isn't fiesta time?"

"Practically never. This is too much for me unless there are people around. That I'm doing it now actually surprises me."

"Uh-huh," said Denison, non-committally.

"You're not surprised?"

"Should I be? My feeling is that each person does what he does either because he wants to or he must—and in either case that's his business, not mine."

"Thanks, Ben. I mean it—it's good to hear. One of the nice things about you, Ben, is that for an Immie you're excellent at accepting us as we are. We're underground people, we Lunarites —cave people, corridor people. And what's wrong with that?"

"Nothing."

"Not to hear the Earthies talk. I'm a tourist guide and have to listen to them. There isn't anything they say that I haven't heard a million times, but what I hear most of all is—" she dropped into the clipped accents of the typical Earthie speaking Planetary Standard— " 'But, dear, how can all you people live in *caves* all the time? Doesn't it give you a terrible *closed-in* feeling? Don't you ever want to see blue sky and trees and ocean and feel wind and smell flowers?' I could go on and on, Ben. Then they say, 'But I suppose you don't know what blue sky and sea and trees are like, so you don't miss them.' As if we didn't receive Earth television and didn't have full access to Earth literature, both optical and auditory—and olfactory sometimes, too."

Denison was amused. He said, "What's the official answer to remarks like that?"

"Nothing much. We just say, 'We're quite used to it, madam.' Or 'sir' if it's a man. Usually it's a woman. The men are too interested in studying our blouses and wondering when we take them off. You know what I'd like to tell the idiots?"

"Please tell me. As long as you have to keep the blouse on, it being inside the suit, at least get that off your chest."

"Funny, funny! I'd like to tell them, 'Look, madam, why the hell should we be interested in your damned world? We don't want to be hanging on the outside of any planet, waiting to fall off or get blown off. We don't want raw air puffing at us and dirty water falling on us. We don't want your damned germs and your smelly grass and your dull blue sky and your dull white clouds. We can see Earth in our own sky when we want to and we don't often want to. The Moon is our home and it's what we make it—exactly what we make it. We own it and we build our own ecology and we don't need you here being sorry for us for going our own way. Go back to your own world and let your gravity pull your breast down to your knees.' That's what I'd say."

Denison said, "All right. Whenever you get too close to saying that to some Earthie, you come say it to me and you'll feel better."

"You know what? Every once in a while some Immie suggests that we build an Earth park on the

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Moon—some little spot featuring Earth plants brought in as seeds or seedlings. Maybe stocked with some animals. A touch of home—that's the usual expression."

"I take it you're against that."

"Of course I'm against it. A touch of whose home? The Moon is our home. An Immie who wants a touch of home had better get back to his home. Immies can be worse than Earthies sometimes."

"I'll keep that in mind," said Denison.

"Not you—so far," said Selene.

THE silence lasted a moment and Denison wondered if Selene were going to suggest a return to the caverns. It wouldn't be long before he would feel a fairly strenuous craving to visit a rest room. At the same time, he had never felt as relaxed as he felt out here. He wondered how long the oxygen in his pack would hold out.

"Ben, do you mind if I ask you a question?"

"Not at all. If it's my private life that interests you, I am without secrets. I'm five-foot-nine, weigh twenty-eight pounds on the Moon, had one wife long ago, now divorced, one child, a daughter, grown up and married. I attended the University of—"

"No, Ben. I'm serious. May I ask about your work?"

"Of course you may, Selene. I don't know how much I can explain to you, though."

"Well—you know that Barron and I—"

"Yes, I know," said Denison brusquely.

"We talk together. He sometimes tells me things. He said you think the Electron Pump might make the Universe explode."

"Our section of the Universe. It might convert a part of our galactic arm into a quasar."

"Really? Do you really think so?"

Denison said, "When I came to the Moon I wasn't sure. Now I am. I am personally convinced that this will happen."

"When do you think it will happen?"

"That I can't say exactly. Maybe a few years from now. Maybe a few decades."

After a brief hesitation Selene said in a subdued voice, "Barron doesn't think so."

"I know he doesn't. I'm not trying to convert him. You don't beat refusal to believe by a frontal attack. That's Lamont's mistake."

"Who's Lamont?"

"I'm sorry, Selene. I'm talking to myself."

"No, Ben. Please tell me. I'm interested. Please."

Denison turned to lie on his side, facing her. "All right," he said. "I have no objection to telling you. Lamont, a physicist back on Earth, tried in his way to alert the world to the dangers of the Pump. He failed. Earthmen want the Pump. They want free energy and want it enough to refuse to believe they can't have it."

"But why should they want it if it means death?"

"All they have to do is refuse to believe it means death. The easiest way to handle a problem is to deny it exists. Your friend, Dr. Neville, does the same thing. He dislikes

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the surface, so he forces himself to believe that solar batteries are no good—even though to any impartial observer they would seem the perfect energy source for the Moon. He wants the Pump so he can stay underground—consequently he refuses to believe there can be any danger from it."

Selene said, "I don't think Barron would refuse to believe something for which valid evidence existed. Do you really have the evidence?"

"I think I do. It's most amazing really, Selene. The whole thing depends on certain subtle factors of quark-quark interactions. Do you know what that means?"

"You don't have to explain. I've talked so much to Barron about all sorts of things that I might be able to follow."

"Well, I thought I would need the Lunar proton synchrotron for the purpose. It's twenty-five miles across, has superconducting magnets and can dispose of energies of twenty thousand Bev and more. It turns out, though, that you people have something you call a Pionizer. It fits into a moderately sized room and does all the work of the synchrotron. The Moon is to be congratulated on a most amazing advance."

"Thank you," said Selene complacently. "I mean, on behalf of the Moon."

"Well, then, my Pionizer results can show the rate of increase of intensity of strong nuclear interaction—and the increase is what Lamont says it is and not what the orthodox theory would have it be."

"And have you shown your results to Barron?"

"Not yet. I expect him to reject them. He'll say the results are marginal. He'll say I've made an error. He'll say that I haven't taken all factors into account. He'll say I've used inadequate controls. What he really will be saying is this: he wants the Electron Pump and won't give it up."

"You mean there's no way out?"

"Of course there is, but not the direct way. Not Lamont's way."

"What's your idea?"

"Lamont's solution is to force abandonment of the Pump, but you can't just move backward. You can't push the chicken back into the egg, the wine back into the grape, the boy back into the womb. If you want the baby to let go of your watch, you don't just try to explain that he ought to do it—you offer him something he would rather have."

"And what would that be in this case?"

"Ah, that's where I'm not so sure. I do have an idea, a simple idea—perhaps too simple to work—based on the quite obvious fact that the number two is ridiculous and can't exist."

Selene took a moment for thought and then, her voice as absorbed as his, said, "Let me guess your meaning. It could make sense to suppose that our own Universe is the only one that can exist or does exist, because it is the only one we live in and directly experience. Once, however, evidence arises that there is a second Universe as well—the one we call the para-Universe—then it be-

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comes absolutely ridiculous to suppose that there are two and only two Universes. If a second Universe can exist, then an infinite number can. Between one and the infinite—in cases such as this—there are no sensible numbers. Not only two, but any finite number is ridiculous and can't exist."

Denison said, "That is exactly my reas—" He heaved himself to a sitting position and looked down at the suit-encased girl. He said, "I think we had better go back to town."

She said, "I was just guessing."

He said, "No, you weren't. Whatever it was, it wasn't just guessing."

11

BARRON NEVILLE stared at her, quite speechless. She looked calmly back at him. Her window panoramas had been changed again. One now showed the Earth a little more than half full.

Finally he asked, "Why?"

She said, "It was an accident, really. I saw the point and I was too enthusiastic not to speak. I should have told you days ago but I was afraid your reaction would be exactly what it is."

"So he knows. You fool!"

She frowned. "What does he know? Only what he would have guessed sooner or later—that I'm not really a tourist guide—that I'm your Intuitionist. An Intuitionist who knows no mathematics, for heaven's sake. So what if he knows that? What does it matter if I have intuition? How many times have you told me that my intuition has no value till it is backed by mathematical rigor and experimental observation? How many times have you told me that the most compelling intuition could be wrong? Well, then, what value will he place on mere Intuitionism?"

Neville grew white, but Selene could not tell whether from anger or apprehension. He said, "You're different. Hasn't your intuition always proved right? When you were sure of it?"

"Ah, but he doesn't know that, does he?"

"He'll guess it. He'll see Gottstein."

"What will he tell Gottstein? He still has no idea of what we're really after."

"Doesn't he?"

"No." She stood up, walked away. She turned back to him and shouted, "No! It's cheap of you to imply that I would betray you and the rest. If you don't accept my integrity, then accept my common sense. There's no point in my telling Denison what you're up to. What's the use of our secret to him—or to us—if we're all going to be destroyed?"

"Oh, please, Selene!" Neville waved his hand in disgust. "Not that."

"No. You listen. He talked to me and described his work. You hide me like a secret weapon. You tell me that I'm more valuable than any instrument or any ordinary scientist. You play your games of conspiracy, insisting that everyone must continue to think me a tourist guide and nothing more, so that my great talents

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will always be available to the Lunarites. To you especially. And what do you accomplish?"

"We have you, haven't we? How long do you suppose you would have remained free if they—"

"You keep saying things like that. But who's been imprisoned? Who's been stopped? Where is the evidence of the great conspiracy you see all around you? The Earthmen keep you and your team from their large instruments much more because you goad them into doing so than out of any malice on their part. And that's done us good rather than harm, since it's forced us to invent other instruments that are more subtle."

"Based on your theoretical insights, Selene."

Selene smiled, "I know. Ben was very complimentary about them."

"You and your Ben. What the hell do you want with that miserable Earthie?"

"He's an immigrant. And what I want is information. Do you give me any? You're so damned afraid I'll be caught that you don't dare let me be seen talking to any physicist, only to you. And you're my— For that reason only, probably."

"Now, Selene." He tried to manage a soothing tone, but betrayed far too much impatience.

"No, I don't care about that really. You've told me I have this one task and I've tried to concentrate on it and sometimes I think I have it, mathematics or not. I can visualize it—the kind of thing that must be done—and then it slips away. But what's the use when the Pump will destroy us all anyway? Haven't I told you I distrusted the exchange of field intensities?"

Neville said, "I'll ask you again. Are you ready to tell me that the Pump *will* destroy us? Never mind might or could. Never mind anything but *will*."

Selene shook her head angrily. "I can't. It's too marginal. I can't say it will. But isn't a simple *might* sufficient in such a case?"

"Oh, Lord!"

"Don't turn up your eyes. Don't sneer. You've never tested the matter. I told you how it might be tested."

"You were never much worried about it till you started listening to this Earthie of yours."

"He's an immigrant. Aren't you going to test it?"

"No. I told you your suggestions are impractical. You're not an experimentalist, and what looks good in your mind doesn't necessarily work in the real world of instruments, of randomness—and of uncertainty."

"The so-called real world of your laboratory." Her face was flushed and angry and she held her clenched fists at chin level. "You waste so much time trying to get a vacuum good enough— There's a vacuum up there—up there on the surface where I'm pointing—with temperatures that, at times, are halfway down toward absolute zero. Why don't you try experiments on the surface?"

"To do so would be useless."

"How do you know? You won't try. Ben Denison tried. He took the trouble to devise a system he could use on the surface and he set it up when he went to inspect the solar

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batteries. He wanted you to come and you wouldn't. Do you remember? It was a very simple thing, something even I could describe to you now that it's been described to me. He ran it at day temperatures and again at night temperatures and that was enough to guide him to a new line of research with the Pionizer."

"How simple you make it sound!"

"How simple it is. Once he found out I was an Intuitionist, he talked to me as you never did. He explained his reasons for thinking that the strengthening of the strong nuclear interaction is indeed accumulating catastrophically in the neighborhood of Earth. It will only be a few years before the sun explodes and sends the strengthening in ripples—"

"No, no, no, *no*!" Neville shouted. "I've seen his results and I'm not impressed."

"You've seen them?"

"Yes, of course. Do you suppose I let him work in our laboratories without making sure I know what he's doing? I've seen his results and they're worth nothing. He deals with tiny deviations that are well within experimental error. If he wants to believe that those deviations have significance and if you want to believe him—go ahead. But no amount of belief will make them have significance if, in fact, they don't.

"What do you want to believe, Barron?"

"I want the truth."

"But haven't you decided in advance what the truth must be by your own gospel? You want the Pump on the Moon, don't you, so that you need have nothing to do with the surface? And anything that might prevent that is not the truth—by definition?"

"I won't argue with you. I want the Pump—and even more I want the other, the thing I'm working toward. One's no good without the other. Are you sure you haven't—"

"I haven't."

"Will you?"

Selene whirled on him again, her feet tapping rapidly on the ground in such a way as to keep her bobbing in the air to the tune of an angry clatter.

"I won't tell him anything," she said, "but I must have more information. You have no information for me, but he may have—or he may get it with the experiments you won't perform. I've got to talk to him and find out what he is going to find out. If you get between him and me, you'll never have what you want. And you needn't fear his getting it before I do. He's too used to Earth thinking—he won't take that last step. I will."

"All right. And don't forget the difference between Earth and Moon, either. This is your world—you have no other. This man, Denison, this Ben, this immigrant, having come from Earth to Moon can, if he chooses, return from Moon to Earth. You can never go to the Earth—never. You are a Lunarite forever."

"A Moon maiden," said Selene derisively.

"No maiden," said Neville. "Though you may have to wait a long while before I confirm the matter once again."

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She seemed unmoved by the threat.

He said, "And about this big danger of explosion. If the risk involved in changing the basic constants of a Universe is so great, why haven't the para-men, who are so far advanced beyond us in technology, stopped Pumping?"

He strode out of her apartment.

She faced the closed door, her jaw taut. She said, "Because conditions are different for them, you incredible jerk."

But she was speaking to herself. He was gone.

She kicked the lever that let down her bed, threw herself into it and seethed. How much closer was she now to the real objective for which Barron and those others had been aiming for years?

No closer.

Energy. Everyone searched for energy. The magic word. The cornucopia. The key to universal plenty. And yet energy was not all.

If one found energy—one could find the other, too. If one found the key to energy, the key to the other would be obvious. She knew the key to the other would be obvious if she could but grasp some subtle point that would appear simple the moment it was grasped. (Good heavens, she had been so infected by Barron's chronic suspicion that even in her thoughts she was calling it *the other!*)

No Earthman would grasp that subtle point because no Earthman had reason to look for it.

Ben Denison would find it for her, then, without finding it for himself.

Except that—if the Universe were to be destroyed, what did anything matter?

12

DENISON tried to beat down his self-consciousness. Time and again he made a groping motion as though to hitch up the pants he was not wearing. He wore only sandals and the scantiest of briefs, which were uncomfortably tight. And, of course, he carried the blanket.

Selene, who was similarly accoutered, laughed. "Now, Ben, there's nothing wrong with your bare body, barring a certain flabbiness. It's perfectly in fashion here. In fact, take off your briefs if they're binding you."

"No!" Denison muttered. He shifted the blanket so that it draped over his abdomen and she snatched it from him.

She said, "Now give me that thing. What kind of Lunarite will you make if you bring your Earth modesties here? You know that prudery is only the other side of prurience. The words are even on the same page in the dictionary."

"I have to get used to this, Selene."

"You might start by looking at me once in a while without having your glance slide off me as though I were coated with oil. You look at other women quite efficiently, I notice."

"If I look at you—"

"Then you'll seem too interested and you'll be embarrassed. But if you look hard you'll get used to it and you'll stop noticing. Look, I'll

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stand still and you stare. I'll take off my briefs."

Denison groaned. "Selene, there are people all around and you're making intolerable fun of me. Please keep walking and let me get used to the situation."

"All right, but I hope you notice the people who pass us don't look at us."

"They don't look at you. They look at me all right. They've probably never seen so old-looking and ill-shaped a person."

"They probably haven't," agreed Selene cheerfully, "but they'll just have to get used to it."

Denison walked on in misery, conscious of every gray hair on his chest and every quiver of his paunch. It was only when the passageway thinned out and the people passing were fewer in number that he began to feel a certain relief.

He began to look about him curiously, not as aware of Selene's conical breasts or of her smooth thighs as he had been. The corridor seemed endless.

"How far have we come?"

"Are you tired?" Selene was contrite. "We could have taken a scooter. I forget you're from Earth."

"I should hope you would. Isn't that the ideal for an immigrant? I'm not the least bit tired. Hardly the least bit tired at any rate. What I am is a little cold."

"Purely your imagination, Ben," said Selene firmly. "You just think you ought to feel cold because so much of you is bare. Put it out of your head."

"Easy to say." He sighed. "I'm walking well, I hope."

"Very well. I'll have you kangarooing yet."

"And participating in glider races down the surface slopes? Remember, I'm moderately advanced in years. But really—how far have we come?"

"Two miles, I should judge."

"Good Lord! How many miles of corridors are there altogether?"

"I'm afraid I don't know. The residential corridors make up comparatively little of the total. There are the mining corridors, geological ones, the industrial, the mycological— I'm sure there must be several hundred miles altogether."

"Do you have maps?"

"Of course there are maps. We can't work blind."

"I mean you personally."

"Not with me, but I don't need maps for this area—it's quite familiar to me. I used to wander about here as a child. These are old corridors. Most of the new corridors—and we average two or three miles of new corridors a year, I think—are in the north. I couldn't work my way through them without a map. Maybe not even with a map."

"Where are we heading?"

"I promised you an unusual sight—no, not me, so don't say it—and you'll have it. It's the Moon's most unusual mine and it's completely off the ordinary tourist trails."

"Don't tell me you've got diamonds on the Moon?"

"Better than that."

THE corridor walls were unfinished here—gray rock, dimly but adequately lit by patches of

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electroluminescence. The temperature was comfortable and the ventilation so effective that there was no sensation of air movement. Yet two hundred feet above was a surface subjected to alternate frying and freezing as the sun came and went on its grand biweekly swing from horizon to horizon.

"Is all this airtight?" asked Denison, suddenly uncomfortably aware that he was below an ocean of vacuum that extended through all infinity.

"Oh, yes. Those walls are impervious. They're all booby-trapped, too. If the air pressure drops as much as ten percent in any section of the corridors there is such a hooting and howling from sirens as you have never heard and such a flashing of arrows and blazing of signs directing you to safety as you have never seen."

"How often does it happen?"

"Not often. I don't think anyone has been killed through air lack for at least five years." Then, with sudden defensiveness: "You have natural catastrophes on Earth. A big quake or a tidal wave can kill thousands."

"No argument, Selene." He threw up his hands. "I surrender."

"All right," she said. "I didn't mean to get excited. Do you hear that?"

She stopped in an attitude of listening.

Denison listened, too, and shook his head. Suddenly he looked around. "It's so quiet. Where is everybody? Are you sure we're not lost?"

"This isn't a natural cavern with unknown passageways. You have those on Earth, haven't you? I've seen photographs."

"Yes, most of them are limestone caves and formed by water. That certainly can't be the case on the Moon, can it?"

"So we can't be lost," Selene said, smiling. "If we're alone—put it down to superstition."

"To what?" Denison looked startled and his face creased in an expression of disbelief.

"Don't do that," she said. "Your face gets all lined. That's right. Smooth out. You look much better than you did when you first arrived, you know. That's low gravity and exercise."

"And trying to keep up with nude young ladies who have an uncommon amount of time off and uncommon lack of better things to do than to go on busman's holidays."

"Now you're treating me as you would a tourist guide again. And I'm not nude."

"At that, even nudity is less frightening than Intuitionism. But what's this about superstition?"

"Not really superstition, I suppose, but most people do tend to stay away from this part of the corridor complex—"

"But why?"

"Because of what I'm going to show you." They were walking again. "Hear it now?"

She stopped and Denison listened anxiously. He said, "You mean that small tapping sound. *Tap—tap* . . . is that what you mean?"

"That's exactly what I mean," she said delightedly. "Come on."

She ran ahead in the slow-motion strides of the Lunarite in unhurried flight. He followed her, at-

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tempting to ape the gait.

"Here—here—"

Denison's eye followed Selene's eagerly pointing finger.

"Good Lord," he said. "Where's it coming from?"

THERE was a drip of what was clearly water, each drop striking a small ceramic trough that led into the rock wall.

"From the rocks. We do have water on the Moon, you know. Most of it we can bake out of gypsum—enough for our purposes. We conserve it pretty well."

"I know. I know. I've never yet been able to manage one complete shower. How you people manage to stay clean I have no idea."

"I told you. First, wet yourself. Then turn off the water and smear just a little detergent on you. You rub it— Oh, Ben, I'm not going through it again. And there's nothing on the Moon to get you all that dirty anyway. But that's not what we're talking about. In one or two places there are actually water deposits, usually as ice near the surface in a mountain's shadow. If our tunnel hits water it drips out. This deposit has been dripping since the corridor was first driven through—and that was eight years ago."

"But why the superstition?"

"Water is the great material resource on which the Moon depends. We drink it, wash with it, grow our food with it, make our oxygen with it, keep everything going with it. Free water can't help but get a lot of respect. Once this drip was discovered, plans to extend the tunnels in this direction were abandoned till it would stop. Even the corridor walls were left unfinished."

"That sounds like superstition right there."

"A kind of awe, maybe. The drip wasn't expected to last for more than a few months—according to precedent. So after this one had passed its first anniversary it began to seem eternal. In fact, that's what it's called: 'The Eternal.' You'll even find it marked that way on the maps. Naturally people have come to attach importance to it—a feeling that if it stops it will mean some sort of bad fortune."

Denison laughed.

Selene said warmly, "No one *really* believes it, but everyone partly believes it. You see, it's not really eternal and it must stop some time. As a matter of fact, the rate of drip is only about a third of what it was when it was first discovered, so that the source is slowly drying up. I've been told some people feel that if the drip happened to stop when they were actually here they would share in the bad fortune."

"I take it you don't believe this."

"Whether I believe it or not isn't the point. You see, I'm quite certain that it won't stop sharply enough for anyone to be able to take the blame. It will just drip more and more slowly and no one will ever be able to pinpoint the exact time when it stopped. So why worry?"

"I agree with you."

"I do, however," she said, making the transition smoothly, "have other worries, and I'd like to discuss them with you while we're alone." She spread out the blanket

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and sat down on it cross-legged.

"Which is why you really brought me here?" He dropped to hip and elbow, facing her.

She said, "See, you can look at me easily now. You're getting used to me. Surely there were times on Earth when near-nudity wasn't something to be exclaimed over."

"Times and places," agreed Denison, "but not since the passing of the Crisis. In my lifetime—"

"Well, on the Moon, 'do as the Lunarites do' is a good enough guide for behavior."

"Are you going to tell me why you really brought me here? Or shall I suspect you of planning seduction?"

"I could carry through seduction quite comfortably at home, thank you. This is different. The surface would have been best for our talk, but getting ready to go out on the surface would have attracted a great deal of attention. Coming here didn't—and this place is the only spot in town where we can be reasonably safe from interruption."

She hesitated.

"Well?" said Denison.

"Barron is angry. Very angry, in fact."

"I'm not surprised. I warned you he would be if you told him that I knew you were an Intuitionist. Why did you feel it necessary to tell him?"

"Because it is difficult to keep things for long from my—companion. Probably, though, he doesn't consider me that any longer."

"I'm sorry."

"Oh, it was turning sour anyway. It's lasted long enough. What bothers me more—much more—is that he violently refuses to accept your interpretation of the Pionizer experiments you ran after the surface observations."

"I told you the way it would be."

"He said he saw your results."

"He glanced at them and grunted."

"It's rather disillusioning. Does everyone just believe what he wants to?"

"As long as possible. Sometimes longer."

"What about you?"

"You mean—am I human? Certainly. I don't believe I'm really old. I believe I'm quite attractive. I believe you seek out my company because you think I'm charming—even when you insist on turning the conversation to physics."

"Please! I mean the question seriously."

"Well, I suspect Neville told you that the data I had gathered were not significant beyond the margin of error and that this makes them unreliable—and he's right enough. Still, I prefer to believe they have the meaning I expected them to have to begin with."

"Just because you want to believe that?"

"NOT just because. Look at it this way. Suppose there is no harm in the Pump, but I insist on thinking there is harm. In that case I will turn out to be a fool and my scientific reputation will be badly damaged. But I already am a fool in the eyes of the people who count and I have no scientific reputation."

"Why is that, Ben? You've

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hinted around something in your background several times. Can't you tell me the whole story?"

"You'd be surprised at how little there is to tell. At the age of twenty-five I was still such a child that I had to amuse myself by insulting a fool for no reason other than that he was a fool. Since his folly was not his fault, I was the greater fool to do it. My insult drove him to heights he couldn't possibly have scaled otherwise."

"You're talking of Hallam?"

"Yes. And as he rose, I fell. And eventually I dropped to—the Moon."

"Is that so bad?"

"No, I rather think it's good. So let's say he did me a favor the long way around. And let's get back to what I was talking about. I've just explained that if I believe the Pump to be harmful and am wrong—I lose nothing. On the other hand, if I believe the Pump to be harmless and am wrong—I will be helping to destroy the world. To be sure, I've already lived most of my life and I suppose I can argue myself into believing that I have no great cause to love humanity. However, only a few people have hurt me—and if I hurt everyone in return that would be unconscionable usury." The Earthman smiled. "Then, too, if you'd rather have a less noble reason, Selene, consider my daughter. Just before I left for the Moon she applied for permission to have a child. She'll probably get it and before long I'll be—if you don't mind my saying so—a grandfather. Somehow I'd like to see my grandchild have a normal life expectancy. So I prefer to believe the Pump is dangerous and to act on that belief."

Selene said intensely. "But here's my point. Is the Pump dangerous or is it not? I mean, the truth—and not what anyone wants to believe."

"I should ask you that. You're the Intuitionist. What does your intuition say?"

"That's what bothers me, Ben. I can't make it come out really certain either way. I tend to feel the Pump is harmful, but maybe that's because I want to believe it is."

"All right. Maybe you do want to believe so. Why?"

Selene smiled ruefully and shrugged. "It would be fun for me to find Barron wrong. When he thinks he's sure, he's so vituperatively sure."

"I know. You want to see his face when he's forced to back down. I'm well aware of how intense such a desire can be. For instance, if the Pump were dangerous and I could prove it, I might conceivably be hailed as the savior of humanity. Yet I swear that I'd be more interested in the look on Hallam's face. I'm not proud of that feeling so I suspect that what I'll do is insist on an equal share of the credit with Lamont—who deserves it—and confine my pleasure to watching Lamont's face when *he* watches Hallam's face. The pettishness will then be one place removed. But I'm beginning to speak nonsense. Selene?"

"Yes, Ben."

"When did you find out you were an Intuitionist?"

"I don't quite know."

"You took physics in college, I imagine."

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"Oh, yes. Some math, too, but I was never good at that. Come to think of it, I wasn't particularly good in physics, either. I used to guess the answers when I was desperate—you know, guess what I was supposed to do to get the right answers. Very often it worked. Then I would be asked to explain and I couldn't. They suspected me of cheating but could never prove anything."

"They didn't suspect Intuitionism?"

"I don't think so. But then, I didn't either. Until—well, one of my first sex-mates was a physicist. In fact, he was the father of my child. He had a physics problem and he told me about it when we were lying in bed afterward—just to have something to talk about, I suppose. And I said, 'You know what it sounds like to me?' and told him. He tried it just for the fun of it, he said, and it worked. Actually that was the first step to the Pionizer, which you said was much better than the proton synchrotron."

"YOU mean that was your idea?" Denison stuck his finger under the dripping water and paused as he was about to raise it to his mouth. "Is this water safe?"

"It's perfectly sterile," said Selene, "and it goes into the general reservoir for treatment. It's saturated with sulfates, carbonates and a few other items, however. You won't like the taste."

Denison rubbed his finger on his briefs. "So you invented the Pionizer!"

"Not invented. I had the original concept. It took lots of development, mostly by Barron."

Denison shook his head. "You know, Selene, you're an amazing phenomenon. You should be under observation by the molecular biologists."

"Should I? That's not my idea of a thrill."

"The legal climax to the big trend toward genetic engineering came about a half-century ago—"

"I know. The case flopped and was thrown out of court. That whole type of study is illegal now—insofar as research can be made illegal. I know people who've done work on it just the same."

"I dare say. On the trail of Intuitionism?"

"No. I don't think so."

"Ah. That's my point. At the height of the push for genetic engineering there was this attempt to stimulate Intuitionism. Almost all the great scientists and artists had intuitive ability, of course, and there was the feeling that this was the single great key to creativity. One could argue that superior capacity for intuition was the product of a particular gene combination and all sorts of speculations rose as to which gene combination that was."

"I suspect there are many possible combinations that would satisfy."

"And I suspect that if you are consulting your intuition here, you are correct. But there were also those who insisted that a single gene—or a single small related group of genes—was of particular importance to the combination, so that one might speak of an Intu-

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ition Gene. Then the whole thing collapsed."

"As I said."

"But before it collapsed," Denison went on, "there had been attempts to alter genes to increase the intensity of Intuitionism and there were those who insisted that some success had been achieved. The altered genes entered the gene pool, I'm positive, and if you happened to inherit— Were any of your grandparents involved in the program?"

"Not as far as I know," said Selene, "but I can't rule it out. One of them might have been. If you don't mind, I'm not going to investigate the matter. I don't want to know."

"Perhaps that's wise. The whole field became fearfully unpopular with the general public and anyone who can be considered the product of genetic engineering would not exactly be greeted gladly. Intuitionism, they said, for instance, was inseparable from certain undesirable characteristics."

"Well, thank you."

"*They* said. At any rate, to possess intuition is to inspire a certain envy and enmity in others. Even as gentle and saintlike an Intuitionist as Michael Faraday aroused the envy and hatred of Humphry Davy. Who's to say the capacity to arouse envy is not a flaw in character? And in your case—"

Selene said, "Surely I don't arouse your envy and hatred?"

"I don't think you do. What about Neville's, though?"

Selene was silent.

Denison said, "By the time you got to Neville you were well known as an Intuitionist, I suppose."

"Not well known, I would say. Some physicists suspected it, I'm sure. However, they don't like to give up credit here any more than on Earth—and I suppose they convinced themselves, more or less, that whatever I had said to them was just a meaningless guess. But Barron knew, of course."

"I see."

Selene's lips twitched. "Somehow I get the feeling that you want to say: *Oh, that's why he bothers with you.*"

"Of course not, Selene. You're quite attractive enough to be desired for your own sake."

"I think so, too, but every little bit helps and Barron was bound to be interested in my Intuitionism, too. Why shouldn't he be? Only he insisted I keep my job as tourist guide. He said I was an important natural resource of the Moon and he didn't want Earth monopolizing me the way they monopolized the synchrotron."

"An odd thought. But perhaps he also felt that the fewer who knew of your Intuitionism, the fewer who would suspect your contribution to what would otherwise be put to his sole credit."

"Now you sound like Barron yourself."

"Do I? And is it possible he gets rather annoyed with you when your Intuitionism is working particularly well?"

Selene shrugged. "Barron is a suspicious man. We all have our faults."

"Is it wise to be alone with me, then?"

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SELENE said sharply, "Don't get hurt because I defend him. He doesn't really suspect the possibility of sexual misbehavior between us. You're from Earth. In fact, I might as well tell you he encourages our companionship. He thinks I can learn from you?"

"And have you?" Denison asked coldly.

"I have. But that isn't my chief reason for spending time with you."

"What is?"

"As you well know," said Selene, "and as you want to hear me say, I enjoy your company. Otherwise I would get what I want in much less time."

"All right, Selene. Friends?"

"Friends! Absolutely."

"What have you learned from me, then? May I know?"

"That would take a while to explain. You know that the reason we can't set up a Pump Station anywhere we want to is that we can't locate the para-Universe, even though they can locate us. That might be because they are much more intelligent or much more technologically advanced than we are—"

"Not necessarily the same thing," muttered Denison.

"I know. That's why I put in the 'or.' But the truth might also be that we are neither particularly stupid nor particularly backward. It might be something as simple as the fact that the para-beings offer the harder target. If 'strong' nuclear interaction is still stronger in the para-Universe they would be bound to have much smaller suns and, very likely, much smaller planets. Their individual world could be harder to locate than ours would be."

Denison nodded.

"Or then again," she went on, "suppose it's the electromagnetic field they detect. The electromagnetic field of a planet is much larger than the planet itself and is much easier to locate. And that would mean that while they can detect the Earth, they can't detect the Moon, which has no electromagnetic field to speak of. That's why, perhaps, we've failed in our effort to make contact and set up a Pump Station on the Moon. And if their small planets lack a significant electromagnetic field, it's no wonder we can't locate them."

Denison said, "That's an attractive idea."

"Next, consider the inter-Universal exchange in properties that serves to weaken their strong nuclear interaction, cooling their suns while strengthening ours, heating and exploding our suns. What might that imply? Suppose they can collect energy one-way without our help but only at ruinously low efficiencies. Under ordinary circumstances to do so would therefore be utterly impractical. They would need us to help direct concentrated energy in their direction by supplying tungsten-186 to them and accepting plutonium-186 in return. But suppose our galactic arm implodes into a quasar. That would produce an energy concentration in the neighborhood of the solar system enormously greater than now exists and one that might persist more than a million years."

"Aha—"

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"Once that quasar forms, even a ruinously low efficiency becomes sufficient. It wouldn't matter to them thereafter whether we were destroyed or not. In fact, we might argue that it would be safer for them if we did explode. While we exist we might stop the Pump for any of a variety of reasons and they would be helpless to start it again. But after an explosion they are home free—no one can interfere. And that's why people who say, 'If the Pump is so dangerous, why don't those terribly clever para-men stop it?' don't know what they're talking about."

"Did Neville give you that argument about the para-men?"

"Yes, he did."

"But the para-sun would keep cooling down, wouldn't it?"

"What does that matter?" returned Selene impatiently. "With the Pump, they wouldn't be dependent on their sun for anything."

Denison took a deep breath. "You can't possibly know this, Selene, but there was a rumor on Earth to the effect that Lamont received a message from the para-men to the effect that the Pump was dangerous, but that they couldn't stop it. No one took it seriously, of course, but suppose it's true. Suppose Lamont did receive such a message. Might it be that some of the para-men were humanitarian enough to wish not to destroy a world with cooperating intelligences in it, and were squelched by an oh-so-practical majority?"

Selene nodded. "I suppose that's possible. All this I knew, or rather, intuited, before you came on the scene. But then you agreed with me when I said that nothing between one and the infinite made any sense. Remember?"

"Of course."

"All right. The differences between our Universe and the para-Universe lie so obviously in the strong nuclear interaction that so far it's all that's been studied. But there is more than one interaction—there are four. In addition to the strong nuclear, there is the electromagnetic, the weak nuclear and the gravitational, with intensity ratios of—" She paused, wet her finger under the drip, traced the figures on the wall: $130 : 1 : 10^{-10} : 10^{-42}$— "But if four, why not an infinite number, with all the others too weak to be detectable or to influence our Universe in any way?"

Denison said, "If an interaction is too weak to be detectable or to exert influence in any way, then by any operational definition, it doesn't exist."

"In *this* Universe," said Selene, with a snap. "Who knows what does or does not exist in the para-Universes? With an infinite number of possible interactions, each of which can vary infinitely in intensity compared to any one of them taken as standard, the number of different possible Universes that can exist is infinite."

"Possibly the infinity of the continuum—aleph-one, rather than aleph-null."

Selene frowned. "What does that mean?"

"It's not important. Go on."

Selene said, "Instead, then, of trying to work with the one para-Universe that has impinged itself

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on us and which may not suit our needs at all, why don't we instead try to work out which Universe, out of all the infinite possibilities, best suits us, and is most easily located? Let us design a Universe—for whatever we design must exist—and search for it."

Denison smiled. "Selene, I've thought of exactly the same thing. And while there's no law that states I can't be completely wrong, it's very unlikely that anyone as brilliant as myself can be completely wrong when someone as brilliant as yourself comes to exactly the same conclusion independently. Do you know what?"

"What?" asked Selene.

"I'm beginning to like your damned Moon food. Or I'm getting used to it. Let's go back home and eat. Then we can start working out our plans. And you know what else?"

"What?"

"As long as we'll be working together, how about one kiss—as experimentalist to intuitionist?"

Selene considered. She said, "How about trying one as man to woman?"

"I think I can manage that. But what do I do so as not to be clumsy about it? What are the Moon rules for kissing?"

"Follow instinct," Selene said.

Denison carefully placed his arms behind his back and leaned toward Selene. Then, after a while, he placed his arms behind her back.

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"AND then I actually kissed him back," Selene said.

"Oh, did you?" snorted Barron Neville. "Well, that's valor beyond the call of duty."

"I don't know. It wasn't that bad. In fact—" she smiled—"he was rather touching about it. He was afraid he would be clumsy and began by putting his arms behind his back—so he wouldn't crush me, I suppose."

"Spare me the details."

"Why? What the hell do you care?" She flared suddenly. "You're Mister Platonic, aren't you?"

"Do you want it different? Now?"

"You needn't perform to order."

"But you had better. When do you expect to give us what we need?"

"As soon as I can."

"Without his knowing?"

"He's interested only in energy."

"And in saving the world," mocked Neville. "And in being a hero. And in showing everybody. And in kissing you."

"He admits to all that. What do you admit to?"

"Impatience," Neville said angrily. "Lots of impatience."

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"I AM glad," Denison said deliberately, "that the daytime is over." He held out his right arm and stared at it, encased in its protective layers. "The Lunar sun is one thing I can't get used to and don't want to get used to. Even this suit seems a natural thing to me in comparison."

"What's wrong with the sun?" asked Selene.

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"Don't tell me you like it, Selene."

"No, of course not. I hate it. But then I never see it. You're an—You're used to the sun."

"Not the way it is here. It shines out of a black sky. It dazzles the stars away instead of muffling them. It is hot, hard and dangerous. It is an enemy—and while it's in the sky I can't help but feel that none of our attempts at reducing field intensity will succeed."

"That's superstition, Ben. The sun has nothing to do with it. We were in the crater shadow anyway and it was just like night. Stars and all."

"Not quite," said Denison. "Any time we looked north we could see that stretch of sunlight glittering. I hated to see it, yet the direction dragged at my eyes. And every time I looked I could feel the hard ultraviolet springing at my viewplate."

"That's imagination. In the first place, there's no ultraviolet to speak of in reflected light—in the second, your suit protects you against radiation."

"Not against heat. Not very much."

"But it's night now."

"Yes," said Denison with satisfaction, "and this I like." He looked about with a continuing wonder. Earth was in the sky, of course, in its accustomed place, a fat crescent bellying to the southwest. Constellation Orion was above it, a hunter rising out of the brilliant curved chair of Earth. The horizon glittered in the dim Earthlight.

"It's beautiful," he said. Then: "Selene, is the Pionizer showing anything?"

Selene, who had been looking at the skies without comment, stepped toward the maze of equipment that had been assembled in the shadow of the crater over the past three alterations of day and night.

"Not yet," she said, "but that's good news really. The field intensity is holding at just over fifty."

"Not low enough," said Denison.

Selene said, "It can be lowered. I'm sure that all the parameters are suitable."

"The magnetic field, too?"

"I'm not sure about the magnetic field."

"If we strengthen that, the whole thing becomes unstable."

"It shouldn't. I know it shouldn't."

"Selene, I trust your intuition against everything but the facts. It does get unstable. We've tried it."

"I know, Ben. But not quite with this geometry. It's been holding at fifty-two for a phenomenally long time. Surely if we begin to hold it there for hours instead of minutes, we ought to be able to strengthen the magnetic field tenfold for a period of minutes instead of seconds. Let's try."

"Not yet," said Denison.

Selene hesitated, then stepped back, turning her back. She said, "You don't miss Earth, do you, Ben?"

"No. It's rather odd, but I don't. I would have thought it inevitable that I'd miss blue sky, green plants, flowing water—all the phenomena represented by the cliche adjective-noun combinations peculiar to

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Earth. I miss none of them. I don't even dream about them."

Selene said, "This sort of thing does happen. There are Immies who say they experience no homesickness. They're in the minority, of course, and no one had ever been able to decide what this minority has in common. Guesses run all the way from serious emotional deficiency—no capacity to feel anything—to serious emotional excess, a fear to admit homesickness lest it lead to breakdown."

"In my case I think the reason is plain enough. My life on Earth was not very enjoyable for two decades and more, while here I work at last in a field I have made my own. And I have your help. More than that, Selene, I have your company."

"You are kind," Selene said gravely, "to place help and company in the order of importance you do. You don't seem to need much help. Do you seek it for the sake of my company?"

Denison laughed softly. "I'm not sure which answer would flatter you more."

"Try the truth."

"The truth is not easy to determine when I value both answers so much." He turned back to the Pionizer. "The field-intensity still holds, Selene."

Selene's faceplate glinted in the Earthlight. She said, "Barron says that non-homesickness is natural and the sign of a healthy mind. He says that though the human body was adapted to Earth's surface and requires adjustment to the Moon, the human brain was not. The human brain is so different, qualitatively, from all other brains that it can be considered a new phenomenon. It has had no time to become really fixed to Earth's surface and can, without adjustment, accept other environments. He says that enclosure in the caverns of the Moon may actually suit it best of all, for that is but a larger version of enclosure in the cavern of the skull."

"Do you believe that?" asked Denison, amused.

"When Barron talks he can make his theories sound very plausible."

"I think it can be made equally plausible to claim that the comfort to be found in the caverns of the Moon is the result of the fulfillment of the return-to-the-womb fantasy. In fact," he added thoughtfully, "considering the controlled temperature and pressure, the nature and digestibility of the food, I could make a good case for considering the Lunar colony—I beg your pardon, Selene—the Lunar city a deliberate reconstruction of the fetal environment."

Selene said, "I don't think Barron would agree with you for a minute."

"I'm sure he wouldn't," said Denison. He looked at the crescent Earth, watching the distant cloudbanks on edge. He fell into silence, absorbed in the view, and remained in place though Selene moved back to the Pionizer.

HE WATCHED Earth in its nest of stars over the serrated Moon horizon where, every once in a while, it seemed to him he saw a puff of smoke where a small meteorite might be landing.

He had pointed out the phenom-

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enon to Selene during the previous Lunar night. She had been unconcerned.

She had explained, "The Earth shifts slightly in the sky because of the Moon's libration and every once in a while a shaft of Earthlight tops a small rise and falls on a bit of soil beyond. It comes into view like a tiny puff of rising dust. It's common. We pay no attention."

Denison had said, "But sometimes it might be a meteorite. Don't meteorites ever strike?"

"Of course they do. You're probably hit by several every time you're out. Your suit protects you."

"I don't mean micro-dust particles. I mean sizable meteorites that would really kick up the dust. Meteorites that could kill you."

"Well, those fall, too, but they are few and the Moon is large. No one has been hit yet."

And as Denison watched the sky and thought of that he saw what, in the midst of his momentary preoccupation, he took to be a meteorite. Light streaking through the sky could, however, be a meteorite only in Earth's atmosphere and not one above airless Moon.

The light in the sky was man-made and Denison had not yet sorted out his impressions when it became, quite clearly, a small rocket vessel sinking rapidly to a landing beside him.

A suited figure emerged, while a pilot remained within, barely visible as a dark splotch among the highlights.

Denison waited. The etiquette of the spacesuit required the newcomer joining any group to announce himself first.

"Commissioner Gottstein here," the new arrival said, "as you can probably tell from my wobble."

"Ben Denison here."

"Yes. I thought as much."

"Have you come here looking for me?"

"Certainly."

"In a space-skipper? You might—"

"I might," said Gottstein, "have used Outlet P-Four, which is less than a thousand yards from here. Yes, indeed. But I wasn't looking only for you."

"Well, I won't ask for your meaning."

"There's no reason for me to be coy. Surely you have not expected me to be disinterested in the fact that you have been carrying on experiments on the Lunar surface."

"It's been no secret and anyone might be interested."

"Yet no one seems to know the details of the experiments. Except, of course, that in some way you are working on matters concerning the Electron Pump."

"It's a reasonable assumption, isn't it?"

"Is it? It seemed to me that experiments of such nature, to have any value at all, would require a rather enormous set-up. This is not of my own knowledge, you understand. I consulted those who would know. And it is quite obvious that you are not working with such a set-up. It occurred to me, therefore, that you might not be the proper focus of my interest. While my attention was drawn to you, others might be undertaking more important tasks."

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"Why should I be used as distraction?"

"I don't know. If I did, I would be less concerned."

"So I have been under observation."

Gottstein chuckled. "Yes. Since you arrived. But while you have been working here on the surface, we have observed this entire region for miles in every direction. Oddly enough, it would seem that you and your companion are the only ones on the Lunar surface for any but the most routine of purposes."

"Why is that odd?"

"Because it means you really think you're doing something with your gimcrack contraption, whatever it is. I can't believe you are incompetent so I think your explanation of what you are doing would be worth listening to."

"I am experimenting in paraphysics, Commissioner, precisely as rumor has it. To which I can add that so far my experiments have been only partly successful."

"Your companion is, I imagine, Selene Lindstrom L., a tourist guide."

"Yes."

"An unusual choice as assistant."

"She is intelligent, eager, interested and extremely attractive."

"And willing to work with an Earthman?"

"And quite willing to work with an immigrant who will be a Lunar citizen as soon as he qualifies for that status."

Selene was approaching now. Her voice rang in their ears. "Good day, Commissioner. I would have liked not to overhear and intrude on a private conservation, but in a spacesuit overhearing is inevitable anywhere within the horizon."

Gottstein turned. "Hello, Miss Lindstrom. I did not expect to talk in secrecy. Are you interested in para-physics?"

"Oh, yes."

"You are not disheartened by the failures of the experiment?"

"They are not entirely failures," she said. "They are less a failure than Dr. Denison thinks at present."

"What?" Denison turned sharply on his heel, nearly overbalancing himself and sending out a spurt of dust.

All three were facing the Pionizer now. Above it—just about five feet above it—light shone like a fat star.

SELENE said, "I raised the intensity of the magnetic field and the nuclear field remained stable, in being—then eased further and further and —"

"A Leak!" Denison said, "Damn it. I didn't see it happen."

Selene said, "I'm sorry, Ben. First you were lost in your own thoughts, then the Commissioner arrived—and I couldn't resist the chance to try on my own."

Gottstein asked, "Exactly what do I see there?"

Denison said, "Energy being spontaneously given off by matter leaking from another Universe into ours."

As he spoke, the light blinked out and many yards away a dimmer star came into simultaneous being.

Denison lunged toward the Pionizer but Selene, all Lunar

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grace propelled herself across the surface more efficiently and got there first. She killed the field structure and the distant star vanished.

She said, "The leak point isn't stable, you see."

"Not on a small scale," said Denison, "but considering that a shift of a light-year is as theoretically possible as a shift of a hundred yards, one of a hundred yards only is miraculous stability."

"Not miraculous enough," said Selene flatly.

Gottstein interrupted. "Let me guess at what you're talking about. You mean that matter can leak through here, there or anywhere in our Universe—at random?"

"Not quite at random, Commissioner," said Denison. "The probability of leakage drops with distance from the Pionizer—and rather sharply I should say. The sharpness depends on a variety of factors and I think we've tightened the situation remarkably. Even so, a flip of a few hundred yards is quite probable and, as a matter of fact, you saw it happen."

"And it might have shifted to somewhere within the city or within our own helmets, perhaps?"

Denison said impatiently, "No. The leak, at least by the techniques we use, is heavily dependent on the density of matter already present in this Universe. The chances are virtually nil that the leak point would shift from a place of essential vacuum to one where an atmosphere even a hundredth as dense as that within the city or within our helmets would exist. It would be impractical to expect to arrange the leak anywhere but into a vacuum in the first place, which is why we had to make the attempt here on the surface."

"Then this is not like the Electron Pump?"

"Not at all," said Denison. "In the Electron Pump there is a two-way transfer of matter, here a one-way leak. Nor are the Universes involved the same."

Gottstein said, "I wonder if you would have dinner with me this evening, Dr. Denison."

Denison hesitated. "Myself only?"

Gottstein attempted a bow in the direction of Selene but could accomplish only a grotesque parody of one in his spacesuit. "I would be charmed to have Miss Lindstrom's company on another occasion, but on this one I must speak with you alone, Dr. Denison."

"Oh, go ahead," Selene said crisply as Denison still hesitated. "I have a heavy schedule tomorrow anyway, and you'll need time to worry about the leak-point instability."

Denison said uncertainly, "Well, then— Selene, will you let me know when your next free day is?"

"I always do, don't I? And we'll be in touch before then, in any case. Why don't you two go on? I'll take care of the equipment."

15

BARRON NEVILLE shifted from foot to foot in the fashion made necessary by the restricted quarters and the Moon's gravity. In a larger room under a world's stronger pull, he would have walked

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back and forth. Here he tilted from side to side.

"Then you're positive it works. Right, Selene? You're positive?"

"I'm positive," said Selene. "I've told you five times by actual count."

Neville seemed not to be listening. He spoke in a low, rapid voice. "It doesn't matter that Gottstein was there, then? He didn't try to stop the experiment?"

"No. Of course not."

"There was no indication that he would try to exert authority—"

"Now, Barron, what kind of authority could he exert? Will Earth send a police force? Besides—oh, you know they can't stop us."

Neville stopped moving, stood motionless for a while. "They don't know? They still don't know?"

"Of course they don't. Ben was looking at the stars and then Gottstein came. So I tried for the field leak, got it—and I had already gotten the other. Ben's set-up—"

"Don't call it his set-up. It was your idea, wasn't it?"

Selene shook her head. "I made vague suggestions. The details were Ben's."

"But you can reproduce it now. For Luna's sake, we don't have to go to the Earthie for it, do we?"

"I think I can reproduce enough of it now so that our people can fill it in."

"All right, then. Let's get started."

"Not yet. Oh, damn it, Barron, not yet."

"Why not yet?"

"We need the energy, too."

"But we have that."

"Not quite. The leak point is unstable—pretty badly unstable."

"But that can be fixed up. You said so."

"I said I thought it could be."

"That's good enough for me."

"Just the same, it would be better to have Ben work out the details and stabilize it."

A silence fell between them. Neville's face slowly twisted into something approaching hostility. "You don't think I can do it? Is that it?"

Selene said, "Will you come out on the surface with me and work on it?"

After another silence Neville said unsteadily, "I don't appreciate your sarcasm. And I don't want to have to wait long."

"I can't command the laws of nature. But I think you won't wait long. Now, if you don't mind, I need my sleep. I've got my tourists tomorrow."

For an instant Neville seemed on the point of gesturing to his own bed alcove to offer its hospitality—but the gesture, if that was what it was, did not really come to birth and Selene made no sign of understanding or even anticipating. She nodded wearily and left.

16

"TO be frank, I had hoped—" Gottstein smiled over what passed for dessert, a sticky, sweet concoction—"that we would have seen each other more often."

Denison replied, "It is kind of you to take such an interest in my

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work. If the leak instability can be corrected, I think my achievement—and Miss Lindstrom's—may prove a somewhat significant one."

"You speak carefully, like a scientist. I won't insult you by offering the Lunar equivalent of a liqueur—that is the one approximation of Earth's cuisine I have simply made up my mind not to tolerate. Can you tell me in lay language what makes the achievement significant?"

"I can try. Suppose we start with the para-Universe. It has a more intense strong nuclear interaction than our Universe has. Hence relatively small masses of protons in the para-Universe can undergo the fusion reaction capable of supporting a star. Masses equivalent to our stars would explode violently in the para-Universe, which has many more but much smaller stars than ours does."

"I follow that," said Gottstein.

"Good. Next, suppose we had a much less intense strong nuclear interaction than that which prevails in our Universe. In that case, huge masses of protons would have so little tendency to fuse that a very large mass of hydrogen would be needed to support a star. Such an anti-para-Universe—one that was the opposite of the para-Universe, in other words—would consist of considerably fewer but far larger stars than those in our Universe. In fact, if the strong nuclear interaction were made sufficently weak, a Universe would exist that consisted of a single star containing all the mass in that Universe. It would be a very dense star, but relatively non-reactive and giving off no more radiation than our single sun does, perhaps."

Gottstein asked, "Am I wrong—or is that the situation that prevailed in our own Universe before the time of the big bang—one vast body containing all the universal mass?"

"Yes," said Denison, "as a matter of fact, the anti-para-Universe I am picturing comprises what some call the cosmic egg, cosmeg for short. The point is that a cosmeg-Universe is exactly what's needed if we are to probe for one-way leakage of matter. The para-Universe we are now using with its tiny stars is virtually empty space. You can probe and probe and touch nothing."

"The para-men reached us, however."

"Yes—possibly by following magnetic fields. There is some reason to think that there are no planetary magnetic fields of significance in the para-Universe, which deprives us of the advantage they have. On the other hand, if we probe the cosmeg-Universe we cannot fail. The cosmeg is itself the entire Universe and wherever we probe we strike matter."

"But how do you probe for it?"

Denison hesitated. "That is the part I find difficult to explain. Pions are the mediating particles of the strong nuclear interaction. The intensity of the interaction depends on the mass of the pions and that mass can, under certain specialized conditions, be altered. The Lunar physicists have developed an instrument they call the Pionizer, which can be made to do

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just such a thing. Once the pion's mass is decreased, or increased for that matter, it is effectively part of another Universe; it becomes a gateway, a crossing point. If it is decreased sufficiently, it can be made part of a cosmeg-Universe and that's what we want."

Gottstein said, "And you can suck in matter from the—the—cosmeg-Universe?"

"That part is easy. Once the gateway forms the influx is spontaneous. The matter enters with its own laws and is stable when it arrives. Gradually the laws of our own Universe soak in—the strong interaction grows stronger and the matter fuses and begins to give off enormous energy."

"But if it is super-dense—why doesn't it just expand in a puff of smoke?"

"That, too, would yield energy, but what actually happens depends on the electromagnetic field—and in this particular case the strong interaction takes precedence because we control the electromagnetic field. It would take quite a time to explain that."

"Well, then, the globe of light that I saw on the surface was cosmeg material fusing?"

"Yes, Commissioner."

"And that energy can be harnessed for useful purposes?"

"Certainly. And in any quantity. What you saw was the arrival in our Universe of micromicrogram masses of cosmeg. Nothing, in theory, prevents our bringing it over in ton lots."

"Well, then, your discovery can be used to replace the Electron Pump."

DENISON shook his head. "No. The use of cosmeg energy also alters the properties of the Universes in question. The strong interaction gradually grows more intense in the cosmeg-Universe and less intense in ours as the laws of nature cross over. That means that the cosmeg slowly undergoes fusion at a greater rate and gradually warms up. Eventually—"

"Eventually," said Gottstein, crossing his arms across his chest and narrowing his eyes thoughtfully, "it explodes in a big bang."

"That's my feeling."

"Do you suppose that's what happened to our own Universe ten billion years ago?"

"Perhaps. Cosmogonists have wondered why the original cosmic egg exploded at some one point in time and not at another. One solution was to imagine an oscillating Universe in which the cosmic egg was formed and then at once exploded. The oscillating universe has been eliminated as a possibility and the conclusion is that the cosmic egg had to exist for some long period of time and then go through a crisis of instability for some unknown reason."

"Which may have been the result of the tapping of its energy across the Universes?"

"Possibly, but not necessarily by some intelligence. Perhaps there are occasional spontaneous leaks."

"And when the big bang takes place," said Gottstein, "can we still extract energy from the cosmeg-Universe?"

"I'm not sure, but surely that is not an immediate worry. The leak-

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age of our strong-interaction field into the cosmeg-Universe would have to continue for millions of years before pushing it past the critical point. And there must be other cosmeg-Universes—an infinite number, perhaps."

"What about the change in our own Universe?"

"The strong interaction weakens. Slowly, very slowly, our sun cools off."

"Can we use cosmeg energy to make up for that?"

"That would not be necessary, Commissioner," said Denison earnestly. "While the strong interaction in our Universe weakens as a result of the cosmeg pump, it strengthens through the action of our so-called Electron Pump. If we adjust the energy productions of the two, then—though the laws of nature change in the cosmeg-Universe and in the para-Universe—they do not change in ours. We are a highway but not the terminus in either direction. Nor need we be disturbed on behalf of the terminuses. The para-men on their side may have adjusted themselves to the cooling off of their sun which may be pretty cool to begin with. As for the cosmeg-Universe, there is no reason to suspect life can exist there. Indeed, by inducing the conditions required for the big bang we may be setting up a new kind of Universe that will eventually grow hospitable to life."

For a while Gottstein said nothing. His plump face, in repose, seemed emotionless. He nodded, apparently following the line of his own thoughts.

Finally he said, "So cosmeg energy is not to replace the Electron Pump but rather to work with it."

"I would suggest that, sir."

"Denison, this will set the world on its ears! Any difficulty in persuading the scientific leadership that the Electron Pump, alone, will destroy us should now disappear."

"Indeed, yes. The emotional reluctance to accept that thesis no longer exists. The problem and the solution are presented at the same time."

"When would you be willing to prepare a paper to this effect if I guarantee speedy publication?"

"Can you guarantee that?"

"In a government-published pamphlet, if no other way."

"I would prefer to try to neutralize the leak instability before reporting."

"Of course."

"And I think it would be wise," said Denison, "to arrange to have Dr. Peter Lamont as co-author. He can make the mathematics rigorous—something I cannot do. Besides, it was through his work that I took the course I have followed. One more point, Commissioner—"

"Yes?"

"I would suggest that the Lunar physicists be involved. One of their number, Dr. Barron Neville, might well be a third author."

"But why? Aren't you introducing unnecessary complications now?"

"It was their Pionizer that made my work here possible."

"There can be appropriate mention of that. But did Dr. Barron actually work on the project with you?"

"Not directly."

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"Then why involve him?"

Denison looked down and brushed his hand thoughtfully over the weave of his pants leg. He said, "It would be the diplomatic thing to do. We would need to set up a Cosmeg Pump on the Moon."

"Why not on Earth?"

"In the first place, we need vacuum. This is a one-way transfer and not a two-way as in the case of the Electron Pump—and the conditions necessary to make it practical are different in the two cases. The surface of the Moon has its vacuum ready-made. To prepare one on Earth would involve an enormous effort."

"Yet it could be done, couldn't it?"

"Secondly," said Denison," if we have two vast energy inflows from opposite directions, with our own Universe between, there would be something like a short circuit if the two outlets were too close together. Separation by a quarter-million miles of vacuum, with the Electron Pump operating only on Earth and a cosmeg job operating only on the Moon, would be ideal—in fact, necessary. And if we are to operate on the Moon, it would be wise, even decent, to take the sensibilities of the Lunar physicists into account. We ought to give them a share."

Gottstein smiled. "Is this the advice of Miss Lindstrom?"

"I'm sure it would be, but the suggestion is reasonable enough to have occurred to me independently."

GOTTSTEIN rose, stretched, then jumped in place two or three times in the eerily slow fashion imposed by Lunar gravity. He flexed his knees each time. He sat down again.

"Ever try that, Dr. Denison?"

Denison shook his head.

"It's supposed to help the circulation in the lower extremities. I do it whenever I feel my legs may be going to sleep. I'll be heading back for a short visit to Earth before long and I'm trying to keep from getting too used to Lunar gravity. Shall we talk of Miss Lindstrom, Dr. Denison?"

"What about her?"

"She is a tourist guide."

"Yes. You said so earlier."

"I also said that she is an odd assistant for a physicist."

"I'm an amateur physicist only—and I suppose she is an amateur assistant."

Gottstein was no longer smiling. "Don't play games, Doctor. I have taken the trouble to find out what I can about her. Her record is quite revealing—or would have been if it had occurred to anyone to look at it before this. I believe she is an Intuitionist."

Denison said, "Many of us are. I have no doubt you are an Intuitionist yourself, after a fashion. I certainly know that I am, after a fashion."

"There is a difference, Doctor. You are an accomplished scientist and I, I hope, am an accomplished administrator. Yet, while Miss Lindstrom is enough of an Intuitionist to be useful to you in advanced theoretical physics, she is, in actual fact, a tourist guide."

Denison hesitated. "She has little formal training, Commissioner. Her Intuitionism is at an unusually

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high level, but it is under little conscious control."

"Is she the result of the one-time genetic engineering program?"

"I don't know. I wouldn't be surprised if she were, however."

"Do you trust her?"

"In what way? She has helped me."

"Do you know that she is the wife of Dr. Barron Neville?"

"There is an emotional connection—not a legal one—I believe."

"None of the connections here on the Moon are what we would call legal. The same Neville you want to invite as third author of the paper you are to write?"

"Yes."

"Is that merely a coincidence?"

"No. Neville was interested in my arrival and I believe he asked Selene to help me in my work."

"Did she tell you this?"

"She said he was interested in me. That was natural enough, I suppose."

"Does it occur to you, Dr. Denison, that she may be working in her own interests and in those of Dr. Neville?"

"In what way would their interests differ from ours? She has helped me without reservation."

Gottstein shifted position and moved his shoulders as though he were going through muscle-pulling exercises. He said, "since the woman is so close to him, Dr. Neville must know she is an Intuitionist. Wouldn't he use her? Why would she remain a tourist guide if not to mask her abilities—for a purpose?"

"I understand Dr. Neville frequently reasons in this fashion. I find it difficult to suspect unnecessary conspiracies."

"How do you know they are unnecessary? When my space-skipper was hovering over the Moon's surface—just before the ball of radiation formed over your equipment—I was looking down at you. You were not at the Pionizer."

Denison thought back. "No, I wasn't. I was looking at the stars—rather a tendency of mine."

"What was Miss Lindstrom doing?"

"I didn't see. She said she strengthened the magnetic field and the leak finally broke through."

"Is it customary for her to manipulate the equipment without you?"

"No. But I can understand the impulse."

"And would there have been some sort of an ejection?"

"I don't understand you."

"I'm not sure I understand myself. But I saw a dim sparkle in the Earthlight, as though something were flying through the air. I don't know what."

"I don't either," said Denison.

"You can't think of anything that might naturally have to do with the experiment that—"

"No."

"Then what was Miss Lindstrom doing?"

"I still don't know."

For a moment the silence was heavy between them. Then the Commissioner said, "As I see it, then, you will try to correct the leak instability and will be thinking about the preparation of a paper. I will get matters into motion at the other end and on my forthcoming

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visit to Earth will make arrangements to have the paper published, and I will alert the government."

It was a clear dismissal. Denison rose and the Commissioner said easily, "And think about Dr. Neville and Miss Lindstrom."

17

IT WAS a heavier star of radiation, a fatter one, a brighter one. Denison could feel its warmth on his faceplate and backed away. There was a distinct X-ray component in the radiation and though his shielding should take care of that there was no point in placing it under a strain.

"I guess we can't question it," he muttered. "The leak point is stable."

"I'm sure of it," Selene said.

"Then let's turn it off and go back to the city."

They moved slowly and Denison felt oddly dispirited. No uncertainty was left, no excitement. He saw no chance of failure from this point on. The government was interested—more and more what came next would be out of his hands.

He said, "I suppose I can begin the paper now."

"I suppose so."

"Have you spoken to Barron again?"

"Yes, I have."

"Any difference in his attitude?"

"None at all. He will not participate. Ben—"

"Yes?"

"I really don't think it's any use talking to him. He will not cooperate in any project with the Earth government."

"But you've explained the situation?"

"Completely."

"And he still won't?"

"He's asked to see Gottstein, and the Commissioner agreed to an interview after he returns from his Earth visit. We'll have to wait till then. Maybe Gottstein can have some effect on him, but I doubt it."

"I don't understand him."

"I do," Selene said softly.

Denison did not respond directly. He shoved the Pionizer and its attendant apparatus into their rocky shelter and asked, "Ready?"

"Ready."

They slipped into the surface entrance at Outlet P-4 in silence and Denison climbed down the entry ladder. Selene dropped past him, braking in quick holds at individual rungs. They removed their suits in the staging area, placed them in lockers.

"Would you join me for lunch, Selene?"

"You seem upset. Is something wrong?"

"Reaction, I think. Lunch?"

"Yes, of course."

THEY ate in Selene's quarters. She had insisted, saying, "I want to talk to you and I can't do so properly in the cafeteria." And when Denison was chewing slowly at something that had a faint resemblance to peanut-flavored veal, she came out with: "Ben, you haven't said a word—and you've been like this for a week."

Denison frowned.

"No, I haven't.

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"Yes, you have." She looked into his eyes with concern. "I'm not sure of how good my intuition is outside physics—but I suppose there's something you don't want to tell me."

Denison shrugged. "They're making a fuss about all this back on Earth. Gottstein has been pulling strings as tough as cables in advance of his trip back. Dr. Lamont is being lionized and they want me to return once the paper is written."

"To Earth?"

"Yes. It seems I'm a hero, too."

"You should be."

"Compete restitution," Denison said thoughtfully, "is what they offer. I can get a position in any suitable university or government agency on Earth."

"Isn't that what you wanted?"

"It's what I imagine Lamont wants and would enjoy—and will certainly get. But I don't want it."

"What do you want, then?"

"I want to stay on the Moon."

"Why?"

"Because it's the cutting edge of humanity and I want to be part of that cutting edge. I want to work at the establishment of the Cosmeg Pump and that will happen only here on the Moon. I want to work on para-theory with the kind of instruments you can dream up and handle. I want to be with you, Selene. But would you stay with me?"

"I am as interested in para-theory as you are."

"But won't Neville pull you off the job now?"

"Barron pull me off?" she asked tightly. "Are you trying to insult me, Ben?"

"Not at all."

"Well, then, do I misunderstand you? Are you suggesting that I'm working with you because Barron ordered me to?"

"Didn't he?"

"Yes, he did. But that's not why I'm here. I choose to be here. He may think he can order me about but he can only do so when his orders coincide with my will, as in your case they did. I resent his thinking he can order me otherwise—and I resent your thinking it, too."

"You two are sex-partners."

"We have been, yes, but what has that to do with it? By that logic I can order him about as easily as he me."

"Then you can work with me, Selene?"

"Certainly—if I choose to."

"But do you choose to?"

"As of now, yes."

Denison smiled. "The chance that you might not choose to—or might not be able to—has been worrying me this past week. I dreaded the end of the project if it meant the end of my working with you. I'm sorry. Selene, I don't mean to plague you with the sentimental attachment of an old Earthie—"

"There's nothing old Earthie about your mind, Ben. There are attachments other than sexual. I like being with you."

Denison's smile faded, then returned. "I'm glad for my mind." He looked away, shook his head slightly.

She watched him carefully, almost anxiously.

Denison faced her again.

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"Selene, there's more than energy involved in the cross-Universe leaks. I suspect you've been thinking about that."

The moment stretched out painfully before Selene said, "Oh, that—"

For a while the two stared at each other—Denison embarrassed, Selene almost furtive.

18

GOTTSTEIN said, "I haven't got my Moon legs quite, but this isn't anything compared to what it cost me to get my Earth legs. Denison, you had better not dream of returning. You'll never make it."

"I have no intention of returning, Commissioner," said Denison.

"In a way that's too bad. You could be emperor by acclamation. As for Hallam—"

Denison said wistfully, "I would have like to have seen his face, but that was a small ambition."

"Lamont, of course, is receiving lion's share. He's on the scene."

"I don't mind that. He deserves a good deal. Do you think Neville will really join us?"

"No question. He's on his way at this moment. Listen." Gottstein's voice dropped one conspiratorial note in pitch. "Before he comes—would you like a bar of chocolate?"

"What?"

"A bar of chocolate. With almonds. I have some."

Denison's face, from initial confusion, came suddenly alive with comprehension. "Real chocolate?"

"Yes."

"Certain—" His face hardened. "No, Commissioner."

"No?"

"No. If I taste real chocolate—then, for the few minutes it's in my mouth I'm going to miss Earth, miss everything about it. I can't afford that. I don't want— Don't even show it to me. Don't let me smell it or see it."

Gottstein looked discomfited. "You're right." He made an obvious attempt to change the subject. "The excitement on Earth is overwhelming. Of course, we made considerable effort to save Hallam's face. He'll continue to hold some position of importance, but he'll have little real say."

"He's getting more consideration than he gave others."

"It's not for his sake. You can't smash a personal image that has been built to a level of such importance—it would reflect on science itself. The good name of science is more important than Hallam."

"I disapprove of that in principle." Denison spoke warmly. "Science must take what blows it deserves."

"A time and place for— There's Dr. Neville."

Gottstein composed his face. Denison shifted his chair to face the entrance.

Barron Neville entered solemnly. Somehow there was less than ever of the Lunar delicacy about his figure. He greeted the two curtly, sat down and crossed his legs. He was clearly waiting for Gottstein to speak first.

The Commissioner said, "I am glad to see you, Dr. Neville. Dr.

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Denison tells me that you refused to append your name to what I am sure will be a classic paper on the Cosmeg Pump."

"No need to do so," said Neville. "What happens on Earth is of no interest to me."

"You are aware of the cosmeg experiments? Of their implications?"

"I know the situation as well as you two do."

"Then I will proceed without preliminaries. I have returned from Earth, Dr. Neville, and it is quite settled as to what will be the course of future procedure. Large cosmeg-pumping stations will be set up on three different places on the Lunar surface in such a way that one will always be in the night-shadow. Half the time, two will be. Those in the night-shadow will be constantly generating energy, most of which will simply radiate into space. The purpose will be not so much to use the energy for practical purposes as to counteract the changes in field intensities introduced by the Electron Pump."

Denison interrupted. "For some years we will have to overbalance the Electron Pump to restore our section of the Universe to the point at which it was before the Pump began operation."

Neville nodded. "Will Luna City have the use of any of it?"

"If necessary. We feel the solar batteries will probably supply what you need, but there is no objection to supplementation."

"That is kind of you," said Neville, not bothering to mask his sarcasm. "And who will build and run the Cosmeg Pumps?"

"Lunar workers, we hope," said Gottstein.

"Lunar workers you must have," said Neville. "Earth workers would be too clumsy to work effectively on the Moon."

"We recognize that," said Gottstein. "We trust the men of the Moon will cooperate."

"And who will decide how much energy to generate, how much to apply for any local purpose, how much to radiate away? Who decides policy?"

Gottstein said, "The government would have to. It's a matter of planetary decision."

Neville said, "You see? It will be the Moonmen who do the work—Earthmen who run the show."

Gottstein said calmly. "No. All of us work who work best. All of us administer who can best weigh the total problem."

"I hear the words," said Neville, "but it boils down anyway to us working and you deciding. No, Commissioner. The answer is no."

"You mean you won't build the pumps?"

"We'll build them, Commissioner, but they'll be ours. We'll decide how much energy to put out and what use to make of it."

"That would scarcely be efficient. You would have to deal constantly with the Earth government since the Cosmeg stations will have to balance the Electron stations."

"We have other things in mind. You might as well know now. Energy is not the only conserved phenomenon that becomes limitless once universes are crossed."

Denison interrupted. "There

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are a number of conservation laws. We realize that."

"I'm glad you do," said Neville, turning a hostile glare in his direction. "They include those of linear momentum and angular momentum. As long as any object responds to the gravitational field in which it is immersed—and to that only—it is in free fall and can retain its mass. In order to move in any other way then free fall, it must accelerate in a non-gravitational way and for that to happen, part of itself must undergo an opposite change."

"As in a rocket ship," said Denison, "which must eject mass in one direction in order that the rest might accelerate in the opposite direction."

"I'm sure you understand, Dr. Denison," said Neville, "but I explain for the Commissioner's sake. The loss of mass can be minimized if velocity is increased enormously, since momentum is equal to mass multiplied by velocity. Nevertheless, however great the velocity, some mass must be thrown away. If the mass that must be accelerated is enormous in the first place, then the mass that must be discarded is also enormous. If the Moon, for instance—"

"The Moon?" said Gottstein with energy.

"Yes, the Moon." Neville remained calm. "If the Moon were to be driven out of its orbit and sent out of the solar system, the conservation of momentum would make it a colossal undertaking and probably a thoroughly impractical one. If, however, momentum could be transferred to the cosmeg in another Universe, the Moon could accelerate at any convenient rate without loss of mass at all. It would be like poling a barge upstream, to give you a picture I obtained from some Earth book I once read."

"But why? I mean, why should you want to move the Moon?"

"I should think that would be obvious. Why do we need the suffocating presence of the Earth? We have the energy we need. We have a comfortable world through which we have room to expand for the next few centuries at least. Why should we not go our own way? In any case—we will. I have come to tell you that you cannot stop us and to urge you to make no attempt to interfere. We shall transfer momentum and we shall pull out. We of the Moon know precisely how to go about building the Cosmeg Pump. We'll use what energy we need for ourselves and produce excess in order to neutralize the changes your own power stations are producing."

Denison said sardonically, "It sounds kind of you to produce excess for our sake, but it isn't for our sake, of course. If our Electron Pumps explode the sun—that will happen long before you can move out of the inner solar system and you will vaporize wherever you are."

"Perhaps," said Neville. "But in any case we are going to produce an excess, so that won't happen."

"But you can't do that," said Gottstein excitedly. "You can't move out. If you get out too far,

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the Cosmeg Pump will no longer neutralize Earth's Electron Pump. Eh, Denison?"

Denison shrugged. "Once they are as far off as Saturn, more or less, there may be trouble, if I may trust a mental calculation I have just made. It will, however, be many years before they receded to such a distance and by that time, we will surely have constructed space platforms in what was once the orbit of the Moon and placed cosmeg pumping stations on them. Actually, we don't need the Moon. They can leave—except that they won't."

Neville smiled briefly. "What makes you think we won't? We can't be stopped. There is no way Earthmen can impose their will on us."

"You won't leave because there's no sense in doing so. Why drag the entire Moon away? To build up respectable accelerations will take years. You'll creep. Build starships instead—miles-long ships that are cosmeg-powered and have independent ecologies. With a cosmeg momentum-drive, you could then do wonders. If it takes twenty years to build the ships, they will nevertheless accelerate at a rate that would enable them to overtake the Moon within a year—even if the Moon could start accelerating today. And the ships will be able to change course in a tiny fraction of the time the Moon would need."

"And the unbalanced cosmeg-pumping? What will that do to the Universe?"

"The energy required by a ship, or even by a fleet, will be far less than that required by a planet and will be distributed throughout large sections of the Universe. It will be millions of years before any significant change takes place. And think of the maneuverability you gain! The Moon will move so slowly it might as well be left in place."

Neville said scornfully, "We're in no hurry to get anywhere—except away from Earth."

Denison said, "There are advantages in having Earth as neighbor. You have the influx of the Immigrants. You have cultural intercourse. You have a planetary world of two billion people just over the horizon. Do you want to give up all that?"

"Gladly."

"Is that true of the people of the Moon generally? Or just of you? There's something intense about you, Neville. You won't go out on the surface. Other Lunarites do. They don't like it particularly, but they go. The interior of the Moon isn't their womb, as it is yours. It isn't their prison, as it is yours. There is a neurotic factor in you that is absent in most Lunarites—or at least considerably weaker. If you take the Moon away from Earth, you make it into a prison for all. It will become a one-world prison from which no man—and not you only—can emerge, not even to the extent of seeing another inhabited world in the sky. Perhaps that is what you want."

"I want independence—a free world, a world untouched by the outside."

"You can build ships in any number. You can move outward at near-light velocities without diffi-

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culty once you tranfer momentum to the cosmeg. You can explore the entire Universe in a single lifetime. Wouldn't you like to get on such a ship?"

"No," said Neville with clear distaste.

"Wouldn't you? Or—couldn't you? Must you take the Moon with you wherever you go? Why must all the others accept your need?"

"Because that's the way it's going to be," said Neville.

Denison's voice remained level but his cheeks reddened. "Who gave you the right to say that? There are many citizens of Luna City who may not feel as you do."

"That is none of your concern."

"That is precisely my concern. I am an immigrant who will qualify for citizenship soon. I do not wish to have my choice made for me by someone who cannot emerge on the surface and who wants his personal prison made into a prison for all. I have left Earth forever, but only to come to the Moon, only to remain a quarter-million miles from the home planet. I have not contracted to be taken forever away for an unlimited distance."

"Then return to Earth," said Neville indifferently. "There is still time."

"And what of the other citizens of Luna? The other immigrants?"

"The decision is made."

"It is not made. Selene!"

Selene entered, her face solemn, her eyes a little defiant. Neville's legs uncrossed. Both shoes came down flat on the floor.

Neville asked, "How long have you been waiting in the next room, Selene?"

"Since before you arrived, Barron."

Neville looked from Selene to Denison and back again. "You two—" he began, finger pointing from one to the other and back.

"I don't know what you mean by 'you two,' " said Selene, "but Ben found out about the momentum quite a while ago."

"It wasn't Selene's fault," said Denison. "The Commissioner spotted something flying at a time when no one could possibly have known he would be observing. It seemed to me that Selene might be testing something I was not thinking of and transfer of momentum eventually occurred to me. After that—"

"Well, then, you knew," said Neville. "It doesn't matter."

"It does, Barron," said Selene. "I talked about it with Ben. I found that I didn't always have to accept what you said. Perhaps I can't ever go to Earth. Perhaps I don't even want to. But I found I liked Earth in my sky where I could see it if I wanted to. I didn't want an empty sky. Then I talked to others of the Group. Not everybody wants to leave. Most would rather build ships and let those go who wish to go while allowing those to remain behind who wish to remain."

Neville's breath was coming hard. "You talked about it? Who gave you the right to—"

"I took the right, Barron. Besides, it doesn't matter any more. You'll be outvoted."

"Because of—" Neville rose to his feet and took a menacing step toward Denison.

The Commissioner said, "Please

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don't get emotional, Dr. Neville. You may be of Luna, but I don't think you can manhandle both of us."

"All three," said Selene, "and I'm of Luna, too. I did it, Barron—not they."

Denison said, "Look, Neville—for all Earth cares, the Moon can go. Earth can build its space stations. It's the citizens of Luna City who care. Selene cares and I care and the rest. You are not being debarred from space, from escape, from freedom. In twenty years at the outside, all who want to go will go, including you if you can bring yourself to leave the womb. And those who want to stay will stay."

Barron Neville seated himself again. There was the look of defeat on his face.

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EVERY window in Selene's apartment now had a view of Earth. She said, "The vote did go against him, you know, Ben. Quite heavily."

"I doubt that he'll give up, though. And if there's friction with Earth during the building of the stations, public opinion on the Moon may swing back."

"There needn't be friction."

"No, there needn't. In any case, there are no happy endings in history, only crisis points that pass. This one has passed—or has been passed—safely, I think, and we'll worry about the others as they come and as they can be foreseen. Once the starships are built, the tension will surely subside considerably."

"We'll live to see that, I'm sure."

"You will, Selene."

"You, too, Ben. Don't overdramatize your age. You're only forty-eight."

"Would you go on one of the starships, Selene?"

"No. I'd be too old and I still wouldn't want to lose Earth in the sky. My son might go. Ben?"

"Yes, Selene."

"I have applied for a second son. The application has been accepted. Would you contribute?"

Denison's eyes lifted and looked straight into hers.

"Artificial insemination?"

Selene said defensively, "That's just good sense, Ben. It's important to have good gene combinations. There's nothing wrong with some natural genetic engineering."

"None at all."

"It doesn't mean that I don't want it for other reasons, too."

Denison nodded and remained silent.

Selene said almost angrily, "Well, there's more to love than sex."

Denison said, "I agree with that. At least—I love you even with sex subtracted."

And Selene said, "And for that matter, there's more to sex than acrobatics."

Denison said, "I agree with that, too."

And Selene said, "And besides—Oh, damn it, you could try to learn."

Denison said softly, "If you would try to teach."

Hesitantly he moved toward her. She did not move away.

He stopped hesitating. ★

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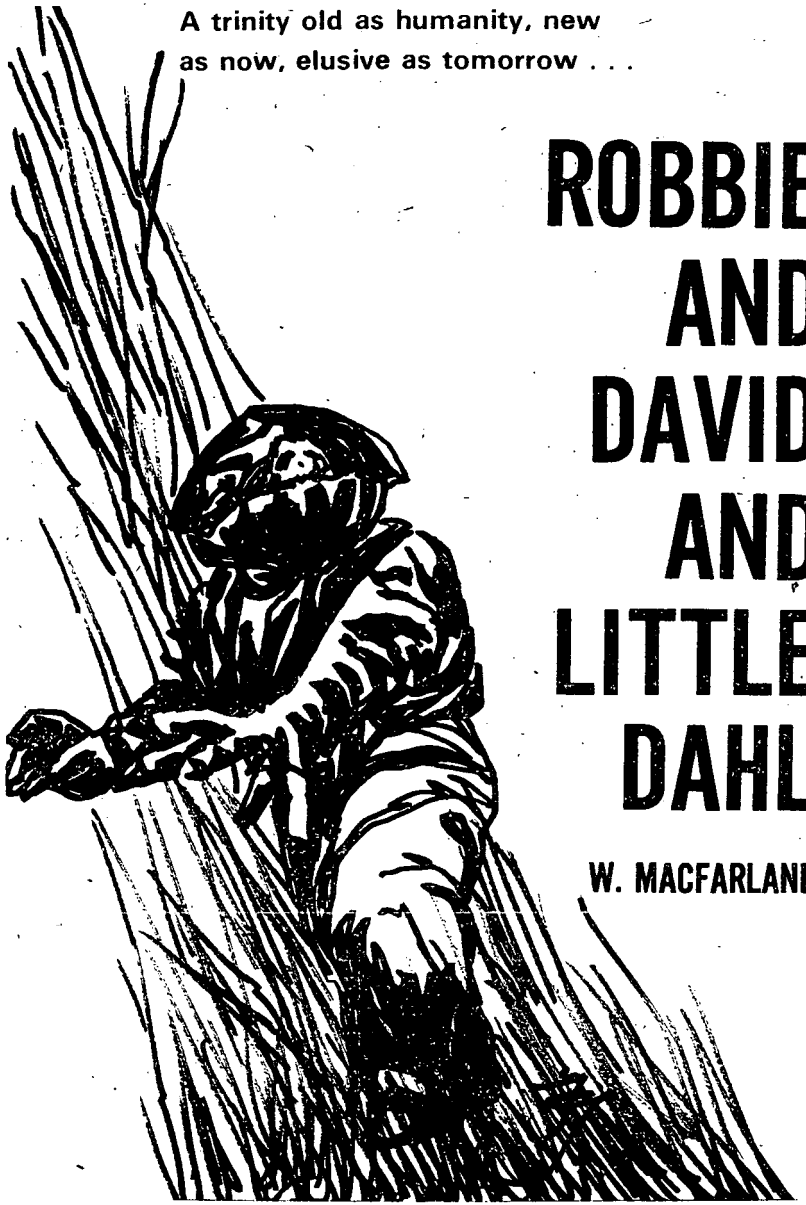
A trinity old as humanity, new as now, elusive as tomorrow . . .



ROBBIE AND DAVID AND LITTLE DAHL

W. MACFARLANE

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BROCAAL was a geologically young planet and the salt machines were a state monopoly. You put a penny into the slot and it rolled inside to strike a gong. The licensee came to inspect the coin and pull the lever that released a capsule down the chute.

Eight-year-old Robbie Hasseldorf was sent as usual for the supper salt. There was a flurry of morality when he returned with his reticule filled with capsules. Failure of the trigger mechanism was not unknown, but it was difficult to determine whether the salt machine was a function of the state or the temple.

"Did anyone see you?" Robbie shook his head. His mother sniffed piously. "A gift from heaven."

His father was doubtful. "Salt maintains the temple. The state is built on salt." He was master gooseherd of the northern watches and sensitive to practical politics.

"The machines illuminate the Eleventh Platitude," said Robbie's brother in a hollow voice. He was marked for a religious career. "'There is a price for living and a price for dying—'" he quoted the whole long verse and finished, "'—nothing under the stars is free.'" He slipped a few capsules into his reticule while the family listened with closed eyes. Robbie peeked between his fingers. "Let us give thanks," said his brother and took one more.

Robbie's older sister thought they should return the capsules to the neighborhood temple—well, some of them—and his younger sister broke one open and licked it up behind her veil with a beatific narrowing of her eyes. No one asked Robbie's opinion, but the Hasseldorf family did not buy salt for several holy days.

When he was sent for salt again the miracle recurred.

The Hasseldorfs were obviously in a state of grace. A well-developed sense of piety precluded any announcement of this condition. Robbie's father prepaid a series of prayers and acquired a new gander from the master gooseherd of the north-northeastern watches. His mother was inspired to try a new and difficult chausable pattern she called the *Star of Brocaal.* His brother bought a royal blue veil from the worm-spinners, his older sister righteously planted twenty-two mulberries and his younger sister began to grow fat.

Once he had watched state mechanics disassemble the salt machine. They told him to beat it, so he borrowed his brother's old green veil and was chased away again. He took mincing steps, wearing his older sister's orange veil—the one she had lost—and in three lingering periods of observation decided folks received only so many capsules from heaven because they lodged in the hopper. He concluded that a long and limber length of plastic should

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solve that theological problem.

Hence Robbie's current miraculous hauls . . .

He was a quiet boy who noticed that those who raised their heads above the crowd tended to get their heads hit.

He shouted with the others at school, "Earth is foul, Earth is corrupt!"

The next section yelled, "The chosen flew on wings of grace!"

The third section shrilled, "In a box of iron through the dark of space!"

The schoolmaster bellowed, "God left Earth with us, the people of his choice!"

The whole school rocked: "Shout our grace! Ring the bell! Brocaal is Heaven, Earth is Hell!"

He had been stimulated by the sacred lessons when he'd begun school. The damned Earthers rolled their eyes and howled. They exposed their mouths and lower limbs and waved their arms. They had no shame. They sold their souls for demon-driven carts and wagons. The wagon tongues lashed the air and the carts rolled about madly with no man to push them. It was a vision of horror and chaos. Later revelations were less exciting. The space flight, the sowing of the good soil, the movement of the moon into the sky, the years of heavenly sleep, the building of Harmonious City with its sixteen spokes radiating from the central temple, all this was endlessly repeated until the slowest child was sodden with tedium.

IT WAS a lean diet. Robbie's mind was starved. He had been in a state of near acceptance when his mother first had sent him for the salt. Then he had learned to disassociate his mind from his mouth.

He yelled with his peers, but he wondered why God did not build a salt machine with a zig-zag chute. He speculated why God dispersed holy gruel from the temples before dawn and before sunset every day. Why could not God arrange a meal in the middle of the day?

He did not suggest this to his teacher or to the Speakers. The latitude allowed young creatures as they are molded to the adult form left no room for such questions. He was careful and he was not stultified. His eager mind was kept alive by the salt machines.

After the two miraculous gifts from heaven Robbie took the coin his mother gave him and very properly put it into the slot. He did this because a peephole had been drilled in the wall of the machine. The hopper had been altered somewhat, too.

Then his brother became an agricultural acolyte and left home to work and pray in the food fields south of the city. Robbie had the attic to himself. The Hasseldorf family was blessed by children. The usual unsanctified family raised one

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or two and the row houses were built with this in mind—until his brother left, the boys had shared the cramped loft. With sole possession of the attic Robbie secured the rarest thing in Harmonious—a secret hiding place. He found a loosely glued floorboard. The loft window opened to the shed roof. He was free during the hours of darkness to continue his private education. A longer and more limber plastic worked well indeed even in the altered salt machines

By the time he was ten, the authorities were seriously disturbed by the thefts. Where every man was his brother's ardent keeper, deviation should have been obvious. Yet the stolen salt simply vanished. Consumption records were examined and there was no major loss of sales in any area. Human factors compounded the problem.

On the night the rogue was nearly caught the special watchman's feet rolled out from under him on quickly scattered capsules. He thumped his head severely. He described the thief as a monster abetted by two large helpers. All men over five feet two inches tall were questioned. Fortunately for the watchman a Speaker had found him, because there were no capsules on the ground by the time the crime was investigated. The drop-off in local sales indicted the entire neighborhood and Robbie's school was honored to power the whipping machine.

Four boys buttoned their smocks between their legs and climbed as fast as they could in the open-sided, fifteen-foot squirrel cage. A shaft turned clanking peg gears that transmitted power to the four stations. The criminal was bound to a whipping block and the drums beat as flails were lowered to his back. Each criminal faced a point of the compass, so the population had a good view. In whippings of this nature, the flails were wide and administered a stinging slap. Four more boys for power, four more men, women or children to howl. The drums growled and throbbed. It was a stimulating day for everyone.

A spirit of larceny awoke in the hearts of some licensees and sporadic petty thievery added to the confusion. Robbie also had good luck. One dewy night he visited the south-southwest spoke and was returning home when he broke open a capsule and was surprised to find the white crystals turned dark in the damp air. After some thought he distributed the salt on doorsteps in the south-southeast spoke. The blue lips in that neighborhood puzzled the authorities. The telltale chemical added to the salt obviously had tattled on the wrong people.

Robbie did not feel altogether depraved because his tongue did not turn black from omission of the truth. He was the victim of his own inquiring mind, which was not his fault. He succumbed to temp-

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tation, but he paid for his transgressions with periods of depression when the universal apathy seemed almost enviable.

His mother's widely admired needlework showed him a possible life within the bounds of society. His father was a devoted student of geese. But despite good examples and good resolutions, boredom drove Robbie to greater risks and he often drowsed in school. When, at the age of twelve, he completed his education, he was ordered to work and pray at the salt pans north of the city.

He was assigned to the master lock builder, an opinionated old craftsman who had his shop and chapel at the upper end of the pans, away from the main enclave. Robbie Hasseldorf began to see some sort of tolerable future for himself in mitre and spline, dovetail, mortise and tenon and all the delightful intricacies the old man insisted on for even the most temporary plastic constructions.

EARLY one morning just before his fourteenth birthday, when the sun was so low the checkerboard of salt ponds was all in shadow, Robbie was returning to the shop with his apprentice tools. He had been called in the middle of the night to correct the stupidity of a zanjero who had broken a gate by beating it in sideways.

A shadow bobbed behind him. It was cast by a beanpole Speaker striding along the dike. He was mumbling to himself: "—heaviness of guilt and the weight of sanctity—boy! Where dwells the apprentice Hasseldorf?"

"He works and prays at the lock builder's shop, sir," said Robbie with correct formality. "But—uh—he is not there now."

"Guide me thereunto. I will speak with his master, exorcise his pallet and wait the sinner's return."

"Is it permitted to know his sin, sir?"

"The world knows his transgression. Why should you not? His name is infamy. What is your name, boy?"

"David—David Devout, sir."

"David, this nefarious Hasseldorf stole salt. His parents and siblings prove innocent under interrogation. They will live."

David was shocked. "How is such a thing possible?" he croaked.

"Well may you ask! My colleague in investigation was stout in the Lord, David. May I be forgiven for doubting the purposes of the Almighty! His weight, in addition to that of the hidden capsules, collapsed the ceiling of the Hasseldorf dwelling. Down he fell, along with hundreds and hundreds of salt capsules."

"Was he hurt, sir?"

"His neck snapped and his spirit flew. The devil Hasseldorf will be grated. He will be macerated and returned to the soil in a spirit of repentence. Thus he will serve man-

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kind. He will grow hard cabbages or perhaps fat rutabagas." The Speaker smacked his lips and continued his scissors walk, David Devout, formerly Robbie Hasseldorf, trotting along behind.

The shop was empty. The master craftsman was installing a rood screen in the salt temple. The other craftsmen and apprentices had carried it there before dawn. David could not offer the Speaker holy gruel as refreshment because no one had brought food from the temple. The devil Hasseldorf had secretly experimented with the gruel and found it possible to bake it into cakes. They were black but durable. The gruel itself would not keep sweet longer than two days. David did not think it necessary to show the Speaker this experiment. Instead he helped him burn another apprentice's pallet. Then he caught the man's interest with the newest type of stock ordered by the central temple.

It was built as a hollow cube, X-braced on the sides with a neck retainer in the center of the top. The sinner could neither sit nor lie with this contrivance about him. Whether he could rest his chin depended on whether the collar was spiked or not. The prototype was not spiked.

"My master has been longing for someone of your magnificent size, sir, to understand if one model will suit all sinners," David said.

"Forward the work of the temple," said the Speaker. David helped him adjust the neck retainer and gave a twist to the simple latch on a corner, well away from the sinner's reach. He put the black gruel cakes into his tool kit. He said a polite goodbye.

FORTUNATELY the wind was from the sea, blowing to the barren hills. David could hear appeals to the Almighty for a considerable distance. It took a surprising time for them to alert the nearest harvesting workers—a good half-mile upwind, raking salt from the last concentration pan and shoveling it into a cart. David walked briskly to the far dike, the long mound of earth that walled the river in spate away from the salt pans. He turned for a last look at the known world. The flat land ran to the dim city, with only rocky Mt. Cluke interrupting the long blue line of the sea. The crew was running toward him. He could hear them shouting. He turned to the hills and began trotting. Robbie Hasseldorf had observed debris in the river, branches of trees similar to, but larger than mulberries. Once he had seen a chip boat in the mud. He thought the chip had come downstream from the hands of some unknown boy. David was going to find out. . .

Brocaal was enlivened differently from most planets. Xenoecologists

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proceed with a reverential sense of mission. They take forever to compatibilize the permutations of a thousand factors to a point where no obvious disaster can be held against them. Contractors supply the sterile soil, pure strains of bacteria and fungi, the required birds and beasts and bugs, the enormous variety of seeds, roots and cuttings, the diatoms, plankton and the rest of the marine ecology to proper temperature and salinity requirements. This takes a long time and a lot of money. It is—and was—standard procedure.

But the temple on Earth had faith, folks, an elderly starship and 160 acres of bottomland near Cuppyville, Alabama. They had scooped off the rich topsoil. They had bought their ocean biology at a bankruptcy sale, had ordered everything in the Burpee catalog, had got four lots of trees at a bargain, had bought animals at a wholesale auction and lifted for the stars with four thousand eight hundred and thirty-five of the faithful stasised in cardboard boxes. They had located Brocaal and seeded it, towed over a planetoid for a moon and put it into stable orbit thirty-four thousand miles from the surface. A moon makes tides and tides are necessary in turn a lifeless world into a livable world. They had planted seeds and trees at the proper time. They had set up standard alarms, settled into naps. They had slept on for maybe two hundred years—the recording clock failed—and the other seeded locations had been forgotten in the establishment of Harmonious City.

David knew nothing of all that. He trotted now because he had a good lead on his front-running pursuer. It was the beanpole Speaker in the hollow cube. The Speaker held the cage off his shoulders by lifting the X-members. David headed for the hills because he feared them and thought others might be as uncomfortable as he was on the irregular ground. After a while he ran, because the man was gaining on him.

AT THE first crest David stopped to ease the pain in his side. The men with rakes and shovels were now walking. The man in the box was fanatic. He was halfway up the hill. David caught his second wind and flew down the long sandy slope and up the next rise. The Speaker closed the distance. The next valley had a watercourse in it, thick with the tallest grass David had ever seen. Gasping and sobbing for breath, he forced his way through and fell chest deep into water. He sank to the ground on the far side. He fumbled through his tool kit. There was nothing to help him. What good was a flaring tool? The melding glue? The pipe cutter? The molding planes? The wobble-wheel knife?

The cubed man burst through the

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bamboo on the far side. David was frantically cutting a stalk of the tall grass. The Speaker howled unintelligibly and splashed into the water. David thrust the stick between his legs and Nemesis fell. The man panted and gibbered while David cut more bamboo. By the time the cubed man could speak clearly he looked like a hurrah's nest, with bamboo every which way.

The promises the Speaker made loudly would have used up a school of boys. He had a hot imagination. Perhaps it would have taken two schools to serve the things he had in mind. David did what seemed reasonable with such a person. Then he stumbled wearily over to the big river and walked upstream.

He ate four of the black cakes the first day. He had little concept of distance. The salt pans were a two-hour walk from the city and that was far. On the second day he ate the other two cakes. Then he got hungrier and found starvation hurt. Like any boy, Robbie Hasseldorf had eaten mulberry leaves and a few silk worms. The sativa stank too bad to eat. He had never seen the food farm south of the city. When the infant supplement had no longer been issued he had been fed the standard gruel. It was different every day, a mixture of cooked and fresh foods, sometimes dry, sometimes juicy. It never contained entire ingredients.

He tried grass and chucked it up. He observed birds and tried their diet. The seeds were tiny and the insects nasty. He had little understanding of basic life-support systems. Education in Harmonious was designed to this end. With no options available, the Right Way was the only way for the populace. Even a restricted life was preferable to the only known alternative.

When the planet Bocaal first had been seeded with animal life, coyotes and raccoons had been selected as predators. They were adaptable beasts and balanced insects and rabbits and birds and frogs—with definite ecological functions—and the coyotes naturally selected injured or weak cattle and sheep. David slumped under a tree and watched a coyote kill a rabbit and begin to eat it. He yelled and startled the beast away. He tried to eat the rabbit himself and got a mouthful of fur. He was down to a hundred and some pounds and staggering when he blundered through a field of corn and found a path.

IT LED to a human construction he did not recognize as a house. A man came around a corner. He wore tubes of material on his arms and legs. He had no beard. David knew he was a man because of his voice.

"Hey, Molly! We win a coup—that twenty-year-old keg of brandy!"

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A woman joined him. She wore no veil. Her nether tubes showed the shape of her hips. "Looks like we better clean it up and feed it. Do you suppose it's a boy or a girl? What's your name, kid?"

He looked at her and blushed. "Dahlton Bradley." He wondered if his tongue were black, but Robbie and David had been hard luck.

"Little Dahl," said the man. "Well, you're a most particular mess. When did you eat last?"

"Don't know, sir." The woman's upper garment showed her shape. Little Dahl stared at the ground. It moved under him.

"Don't call me sir. I'm Ed Waddell. Molly, this poor little lad needs a drink first thing."

The woman went into the shiny structure and brought out a bottle and glass. Waddell splashed it half full. Little Dahl surrendered himself to the intentions of these people and drank the contents.

The woman said, "I'm Molly Wye—take it easy, boy."

He did not hear her. The liquid clawed down his throat and exploded in his stomach. He wheezed for breath. His eyes went wide and began to run water. He sneezed rapidly, each sneeze louder than the last. His body shook and so did theirs. He saw this through a mist of tears. He was not accustomed to laughter but he smiled weakly when he was fairly sure he was going to live.

They gave him a bowl of something called stew. It was a very little portion. He was disappointed but did not complain. The man led him to a rectangular sheet with poles tied at either end. The poles were tied to trees. Waddell picked him up and put him in the middle, parallel with the poles. The trees spun around him, though when he opened his eyes he saw this was not true. When he opened his eyes again the sun was at the other side of the sky.

This time the bowl of stew was large. It was filled with unfamiliar things in large pieces. It was the best food Little Dahl had ever had. Robbie and David never tasted anything so good. Ed Waddell and Molly Wye watched him eat. They did not speak because he would put down his spoon with trembling fingers, fold his hands in his lap and wait for permission to begin again.

When he had licked the bowl clean as all proper people do he said, "Thank you. Your temple must be close by. I never had such good gruel."

"Temple, hell! That's beef stew, boy. You mean to say it's true they feed you slop like we heard?" Little Dahl haltingly explained the city food system, to their disgusted amazement. "No wonder you got the punies, kid," said Waddell.

"He's got years of eating to catch up on," said Molly. "How old are you, Little Dahl?"

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"Fourteen," he said and wondered drowsily where he had been on his birthday. There would be no new smock for him that year—or any other year. As it turned out, Molly Wye cut down a pair of her own pants and a shirt to fit him.

HE WORKED—but did not pray much—for two months on the farthest downriver clearing of the Haven people. His training in obedience made it possible for him to withstand an unending series of shocks. The food was a constant surprise. The metal house was a bewilderment. The variety of skills casually exhibited by the two seemed impossible. The music Molly played on a guitar opened entire realms of wonder. The simple uses of wood amazed him as much as the dependence on plastics in Harmonious amazed Ed and Molly.

The difference that set every familiar pattern askew, the difference that made life a rushing stream instead of a salt pan, the bittersweet difference that tilted Little Dahl from his foundations was laughter. He knew about laughing, all right—the short bark when the teacher stepped back off the platform and jarred his spine, the covert snickering when the wind raised a smock above a woman's ankles, the uneasy titter when others were whipped—he understood those. Ed and Molly laughed, though, for sheer joy.

How they laughed when he told them about the Speaker in the cube. Their eyes were bright when he said the man must have nudged open the bolt on the double doors of the lock shop. And they were uproarious when he described how he pulled the bamboo from around the Speaker's legs and made a total hurrah's nest around his shoulders. He had pushed the bundle into the stream and it had floated off, bald head sticking above the greenery like a red goose-egg cursing in a nest.

Little Dahl learned to laugh with them, though it came hard at first. And he worked until he was told to stop. He even came to some terms with his naked body and learned to paddle in the river. He could bait hooks on the trotline and eat fish. The days were not long enough for all the new things he had to think about.

When the ears were stiff and dry, Ed started up the house and floated it above ground over to the corn-patch. He taught Little Dahl how to shuck corn and throw it into the powered trailer. Little Dahl did not laugh. He was somber and fearful.

Molly noticed his disquiet and the last of the corn-shucking days were devoted to an explanation of the principle of anti-gravity—how the sunpower conversion unit triggered the energy helix of the magnetic loom to weave power

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strips. He understood very little of what they said, but he lost his fear and dreamed no more of groping hands and wagon tongues in the sky. That usage made for good or ill was another of a hundred new ideas.

Ed and Molly were pleasant youngsters in the first summer of their first marriage and found Little Dahl a useful third party in their exploration of each other. They were almost as sorry as he when the harvest was completed and they began the long journey up the river to Haven. The trailer was overflowing and the house was half-filled with corn. The weight was too great, they solemnly told each other, to lift over the tree-tops on the most direct route. They rigged paddlewheels, lowered a keel and rudder into the water, and followed the meanderings of the river for a last delightful week. They ran eight hundred slow miles before they turned into a tributary, followed it to the lake and brought home their harvest and Little Dahl.

HAVEN was inside a wide loop road running from the lake and circling back to the lake. It was filled with tree-hidden houses. Ed and Molly retracted the keel and rudder, lifted ashore and folded the paddles. From the gazebo, the glassed-in pilot house on the roof, Little Dahl watched the traffic from wide eyes. The other houses were in the air, guided by directional vents. Ed said it was a question of power available for constant use. He and Molly lifted in the same fashion and delivered the corn to storage halfway around the road. They towed the house to their residential pad inside the loop with a common-use ground car.

Ed said it was time to collect the brandy for the coup. Little Dahl knew about this. The governance board of Haven had a standing offer for the delivery of any Harmonious resident in reasonably good condition. The prestige of the coup and the old brandy were enormous. "And you got to go somewhere," said Molly sadly. They drove the ground car to the governance building on the lake-front.

Tad Michels welcomed them and they trooped over to the auditorium where a handsomely finished keg was on display. Molly liked the gold plaque even better. Jolly Ed shook Little Dahl's hand and sprightly Molly brushed a kiss on his mouth. It was the first one he had ever had and he rubbed his mouth to remove the tingle.

Michels said, "Well, Dahlton," and smiled. He was an easy man with gray hair and wrinkles around his eyes and mouth. "You'll be wondering if you were sold into slavery for a keg of brandy."

Nothing of the kind. What bothered Little Dahl was his lack

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of sorrow at parting from Ed and Molly. Was he an unfeeling monster? Surely security was the first desire of all creatures, but he was excited at the idea of new experience.

Tad Michels said, "Freedom is earned and the lazy are enslaved, if only to themselves—do you see what I am talking about?"

"No, sir," said Little Dahl.

"We need your help, young man. It's not often someone survives Harmonious. There's equity to be done."

They drove beyond the loop road and left the car at a large building dug into a hill. Michel's explaination, "Manufactuary," did not enlighten Little Dahl. The building had a feeling of age about it. He and Michel entered by a tall door that slid to one side. "Wedgelock," said Michels. They walked down a hall with misproportioned doors on either side and Michels rapped on one of them. An unhuman voice said, "Come—" and the door slid aside. The hair on the back of Little Dahl's neck rose when he saw the creature on the wall bed.

IT WAS alien, a caricature of a man. It swung its feet to the floor and stood incredibly long and thin. Bones made the skin taut over the cheeks, the nose was a beaky promontory and the eyes were deep in brow caves. It rubbed its nobby head with stick fingers and Little Dahl half expected the black fuzz to crackle.

"Captain Sheppard, Dahlton Bradley has just come to us from Harmonious," said Michels.

"Displaced, boy? I'm time-displaced by the Speakers. Me, an interface plug-puller. I found this planet and sold it to the temple for a scout ship. It went against their principles to pay me or kill me, so the sanctimonious rascals tricked me into stasis. I figure I'm three hundred and eighty-two years old and I want my pay." He drawled the words in a way Little Dahl had never heard before. It didn't matter. He didn't understand them anyway.

"What are your plans, Captain?" said Michels easily.

"Get off this one-point-three-oh planet, but not back to Earth. I'm going to Faradis, a little overdue. I want to see if the birth rate still runs four female to one male. Is Frogface Cluke still stuffed in your city, boy?" Little Dahl's face was blank. "I mean Arthur Otis Cluke, old Frogface, your founding father."

Little Dahl gulped. Speaker Cluke, the indomitable leader, the First Speaker of Brocaal. "He is guh-guarding us from Heaven, sir. My grandfather saw him at the tricentennial of the landing."

"Jazzed to the ears, I bet. They couldn't turn him loose. Frogface never took kindly to the creepy

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clowns you got running things. Give the old devil his due. He's no belly-crawling prig. No wonder they jazzed him and stuffed him in stasis." The man sighed. "Do you know the central temple, boy?"

Little Dahl managed to nod. His world was reeling. Mt. Cluke dominated the city. Speaker Cluke stood on the right hand of God.

"Been in the power room?" Sheppard asked.

"Nuh-no sir," Little Dahl stuttered at the idea. "It's suh-sacred. It provides the energy to prepare food and make plastic."

Michels said, "I don't understand why Harmonious uses plastics instead of wood. How extravagant in time to grow hemp and raise silkworms for building material and clothing."

"Planned with the best intentions," said Sheppard. "Keep people busy-busy in a prison without bars. That's why they stasised Frogface. Modern medievalism traps men away from the land where they might learn something. You can make them dependent as dogs. They do any kind of tricks to stay home."

"But why do they put up with it?"

"Where's to run to? Security is the best blue-sky con game. Is there a sacreder place than the power room, boy?"

"The rel-reliquary, 'suh-sir." How could Harmonious City be a prison when it opened the door to the afterlife? What could you do with your life here and now but prepare for death?

"Do you know where it is, Little Dahl?"

"In the center-center, sir."

"We'll bust that place open," said Captain Sheppard.

THE next day Little Dahl still felt like an ant on a leaf in a torrent, except he was riding a machine through an ocean of air. He looked through a window and the world was diminished beneath him. The streams were strings of shining silk. Tentacles of growing things reached fingers into hollows and valleys.

Captain Sheppard crouched in the seat beside him and grumbled: "Huff and puff and stagger through cloudland all day. Eighty miles an hour. These people got no idea of time. Well, boy, we'll land short, grab us forty winks and make a reconnaissance and consult with the right hand of God—that all right with you?"

"Yessir," said Little Dahl. He wondered if he would ever understand anything. The river winked up at him. The only mirrors in Harmonious were in the temples. Husbands and fathers were always standing around while women went to look at themselves. Last night in his room, he had seen a figure walk toward him from a duplicate room. It had thick plastic-yellow hair and a smooth, unlined face. The eyes

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were blue and innocent. They shone with honesty, nothing at all like the person inside who had stolen salt and pushed a Speaker into a river.

Captain Sheppard was humming a sad tune. How could a man three hundred and eighty-two years old be so childish? Only children sang. Grownups felt the drums in their bones and were properly silent in Harmonious. The man yawned and said, "Whatever else, they're not stupid at Haven. They don't want us around to crumb things up. I suppose—" he yawned again—"it could be a sense of equity. They found me welded in a lost broom closet. Here, boy, you fly this dratted thing a while."

He showed Little Dahl how to tilt the stick forward to go down, and screw it right or left for fast or slow. He wriggled in the too-small seat and talked all the time. Little Dahl heard only some of it as he cut over the curves of the river. An unplugger pulled out of interface at random . . . that was how Captain Sheppard had found Brocaal . . . the ship from Earth split down the middle on landing day . . . the people of Haven were reactionaries—whatever that meant—and maintained their technical culture. Harmonious was settled by idealists—whatever they were—whose interest was the life of the spirit at whatever cost. "—and they made a compact not to bother each other, ho-ho. But the population's not doubled since, maybe on account of this damn heavy one-point-three-oh, so there's no growth pressure—stay away from clouds. They're bumpy."

"Yessir," said Little Dahl, sweating, but he didn't understand at all. Nobody ever started from the beginning—he felt drowned in unreconciled facts. Sheppard told him the ship split in two because it was designed that way as a safety measure. Safe from what? And the ship was not a "box of iron" as he learned at school, but the scouts were. The ship was more like a pair of hollow cubes with everything held inside by "wave mechanics." Little Dahl had seen waves and he had seen mechanics. He groaned aloud.

Sheppard looked at him. "Hey, wake up. There's the delta on the horizon. Twist to slow. Leave the stick straight. Crank down on this wheel. That's right, you catch on pretty good. We'll land in that little valley ahead and have a snooze. I checked the alarm and it's all right. It goes off in four hours, then it buzzes for ten minutes and howls on interface alarm for five. If they got a radio watch in Harmonious they won't hear that. Then the whole thing self-destructs. The Havens don't want the nuttys to get it."

"Yessir," said Little Dahl, understanding one word out of three. Then he could not speak: The river ran through hills and there was a checkerboard tracery, no bigger

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than a spiderweb in the sunset light. The salt ponds and pans. And over to the left was Harmonious. That small? Was this the city that so dominated his mind?

THE pumps of the air machine were silent and there was no hiss from the propulsion nozzles. The machine settled beside a clump of bamboo. Little Dahl was numb with fatigue but he could not sleep. He was in a state of suspended animation, like a wire bridge he'd seen at Haven. He was caught in mental tension between ground and sky. He had just eaten sandwiches with the captain, but he longed—in a funny way—for holy gruel. Would he ever feel at home again? Captain Sheppard snored as the night wore on.

The alarm buzzed. Sheppard snapped awake. Little Dahl felt like a hopper full of lodged salt capsules. They rose over the hill and found the delta country blanketed with fog. Sheppard swore. He consulted the compass and drove slowly toward Mt. Cluke, dark over the fog. They dropped into the mist in total silence. The fog was not heavy. They saw a street appear below them, the row houses dark and glum. A neighborhood temple was like a bead on the spoke, but Sheppard snorted when the street ended and open land began. He turned the air machine and drifted along the spoke to the center. Visibility was two hundred feet.

At the temple he pulled back and flew an arc across the rays. The sativa was harvested rotationally. The third wedge was freshly plowed —the next was being cut and the next was in full growth, nine feet tall. Little Dahl was horrified when the captain proposed to hide the air machine in the sativa. Robbie Hasseldorf had crossed the growing fields with light feet, but the air machine would crush the plants. The captain growled and said Harmonious could get along without a few gallons of furfural, which he seemed to think was a chief sativa product. Little Dahl had never heard of it.

So they landed in total sin, forty feet from the center paving. The crushed plants had a monstrous stink. The acrid pungency wrinkled Little Dahl's nose. It gave him a measure of his own displacement. The smell was familiar from childhood—and it nearly choked him. Sheppard strangled a fit of coughing.

"Sunny beaches!" he said in a grating whisper. "That stink really torques my jaws!"

They pushed through the dripping vegetation. The wide walkway was empty. They crossed to an arch in the middle of one of the sixty-four sides. Against the familiar building, Sheppard was a stick man who moved with spider quiet. Little Dahl shuddered. The stick fingers closed on his shoulder as they came to the end of the tunnel.

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"Whipping machine," whispered Little Dahl, pointing to the left. He knew where he was now, just at the west-northwest spoke. The center-center lay ahead lost in the fog, perfectly circular, across four hundred feet of open space.

"Now," whispered Sheppard. They ran across the paving and the reliquary loomed ahead. Little Dahl marveled at how much easier it was to run in pants than a smock and wondered atheistically if the clothing of Harmonious had been designed to hinder the wearer.

Sheppard sucked in his breath at the door. "Standard scoutship. Number-letter combination. What day was the landing, Little Dahl?"

"The fuh-first day."

"Lemme see—oh, hell—hunch over to hide the light." He bent a plastic tube and the glass vial inside crackled as it broke. The liquid was a dilute solution of hydrogen peroxide and a catalyst. It mixed with a derivative of salicylic acid. The tube glowed yellow green and grew brighter and brighter. "Should have worn a damn tent to hide it," grumbled Sheppard. "Eh, I think I remember." He turned the dials to April 1, 2026 and cautiously pulled the lever. The door creaked open.

A wild scream rose behind them. The captain pushed Little Dahl into the building. "Sacrilege! Violation! Awake all! Sac—"

Sheppard pulled the door shut and he and Little Dahl stood in dead silence. Little Dahl was cast even more into ambivalence. Would he rather take his chances outside or be in this iron box with a stick man bathed in yellow green light?

"Pretty good guess," said Sheppard complacently. "April Fool's Day." He reset the lock from the inside to read July 4, 1776. He was not disturbed to be imprisoned in the reliquary. Little Dahl was terrified. The captain opened the inner door and walked down a hall. It was built to his scale. The doors were tall and the slide grip was high for Little Dahl. At the end of the hall they entered a room filled with machinery. The captain was humming as he sat in a chair that fitted him. He touched a control and stopped humming. He swore dreadfully.

LITTLE DAHL was frozen. The chartreuse light was horrible. On the floor was a body in a transparent box. It was not God himself, but it was Speaker Cluke. In real life—or death—Little Dahl saw he was a stick man like Captain Sheppard.

Sheppard's remarks were ungodly. He strode over and kicked the box. Little Dahl was again amazed by the man. He was not angry.

"We'll have to jerk Frogface out of stasis. Somebody pulled the power spool. He might know where they put it. Lemme see now." He

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kneeled beside the box, a demon in the crepitating light. He grumbled as he pushed and pulled at the base of the coffin. "—didn't want the old devil on his feet a while—prob'bly raise hell—stasis is all right, but—"

He raised the lid.

Speaker Cluke continued: "—won't stand for it! You can't do this to me! The damn dope wore off and I'll see—you all—hanged—" He blinked.

"Hello, Frogface," said Sheppard.

"What year, Cappy?"

"Three-thirty-two after landing."

"How'd you get out?"

"They stuck me in Beta in a broom closet. People there didn't find me until last month. How come they stasised you?"

"Somewhat because I didn't like your deal. Somewhat because I stood halfway between Alpha and Beta. Cappy, how did Beta turn out?"

"They still use the fabrication unit and the tapes work fine. Now listen, old buddy, here's the situation we find ourselves in—" and he explained about the missing power spool.

"Help me out of the box. Damn this heavy gravity. Last time they aired me all doped up, damn if they hadn't all shrunk. They look like a race of dwarfs—there's one over there!"

"Not full grown. He's all right. How about the spool?"

"In interface stasis. I was a step ahead of them."

"Hell," said Sheppard, "how do we get it?"

"No sweat," said God's right hand. "Got a holy two-man interface rig, sun-powered strip storage, no sweat."

"Might as well get it now," said Sheppard.

"Still want to go to Faradis?"

"Soon as possible, old friend."

Cluke hesitated. "I think you need a chaplain." His voice was sad and pondering. "I've seen the theology of discipline in action, God help me. Now I'd like to understand the theology of passion—Faradis seems a likely place. I'll go along."

"Little Dahl, we'll be gone half an hour," said Sheppard. "Sit tight and we'll take off for Faradis together."

Little Dahl could not think. If the First Speaker himself found Brocaal impossible—or was Cluke a devil from hell?

His mind was in a total state of turmoil. No time seemed to pass, but he heard the men returning. He fled on silent feet. He ran down the misproportioned hall and through the door to the closet. He flung himself on the lever. The door opened. There were torches in the fog. Panic-faced Speakers withdrew as he slammed the door. Not because of him.

An enormous voice was saying, "—damn little fool! You've buttered your bread—" whatever that meant —"now lie in it. Stand back

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all. Stand back, I tell you—"

Two Speakers held him firmly. Little Dahl breathed deeply of the foggy air and the stink of torches and sativa and the stink of fear. There was silence, then a horrid *ahoogah-ahoogah* noise.

When the center-center cracked its foundations, strained and lurched up, Little Dahl was suddenly calm. He did not want to be macerated by graters on the shipping machine. He broke from the loosened grasp of his captors and fled through the crowd. There was a panicky moan and dark figures rushed through the tunnel with him. They fled on the walks. He plunged into the sativa and found the air machine.

This thing was what the captain pushed first. A Speaker with an enraged face pounded on the window. Now crank. The air machine rose. And this was what the captain did next—but nothing happened

AND there the machine hung until morning when a breeze drifted away the fog. The machine drifted with it and a crowd of men gathered underneath and followed. When the sun came up Little Dahl took heart after a night of terror.

The warning alarm buzzed. The machine would destruct in fifteen minutes and he could do nothing about it. The Wind picked up and blew him faster than the crowd could run. The buzzing grew more clamorous. The machine grated to a stop on top of Mt. Cluke with Harmonious City spread below. Little Dahl scrambled out. Men circled the hill. He might make good fertilizer after all.

Suddenly they stopped. A shadow engulfed him. He turned.

A totally strange ship settled onto the crest. The side opened and a ramp extended itself. A man in glorious red and gold sauntered down.

Little Dahl didn't hesitate. "Save yourself, sir!" he shouted.

"What—?"

"Religious fanatics! Tear you to pieces! Save me, too!"

"Heard your interface alarm, youngster. Got trouble?"

The boy panted to the foot of the ramp. "Oh, sir, anti-rational madmen! They—uh—killed my parents when we landed here. I was just a baby." He grabbled with sincerity. The crowd was shouting. The man in red blinked and began to walk up the ramp. The boy followed him.

"Intentional primitives, hah? Come along, then. We'll stretch our legs elsewhere. What's your name, boy?"

The ramp sucked up behind them, shutting away a world.

Robbie Hasseldorf? David Devout? Dahlton Bradley? He didn't want to lead any of those lives again.

"Medlar, sir," he said bravely. His blue eyes shone with innocence and a kind of honesty. "Eddie Medlar." ★

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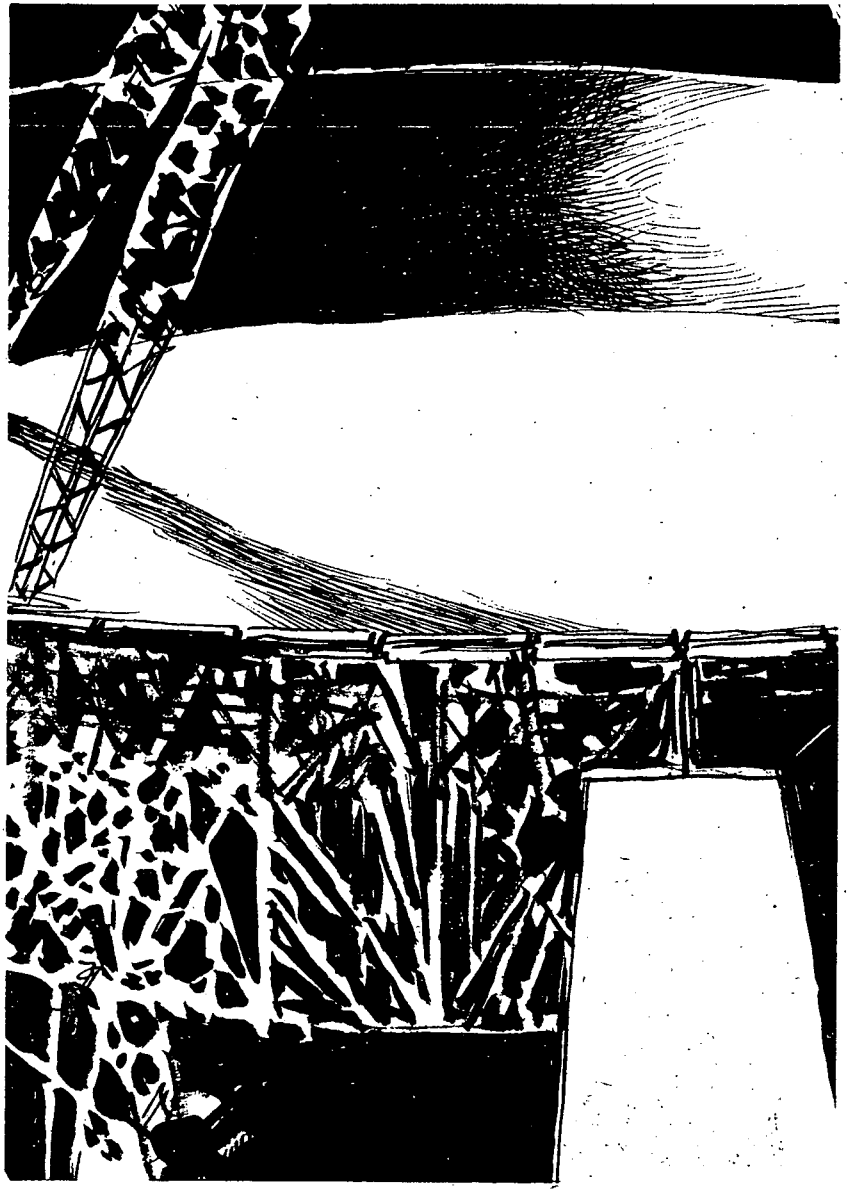

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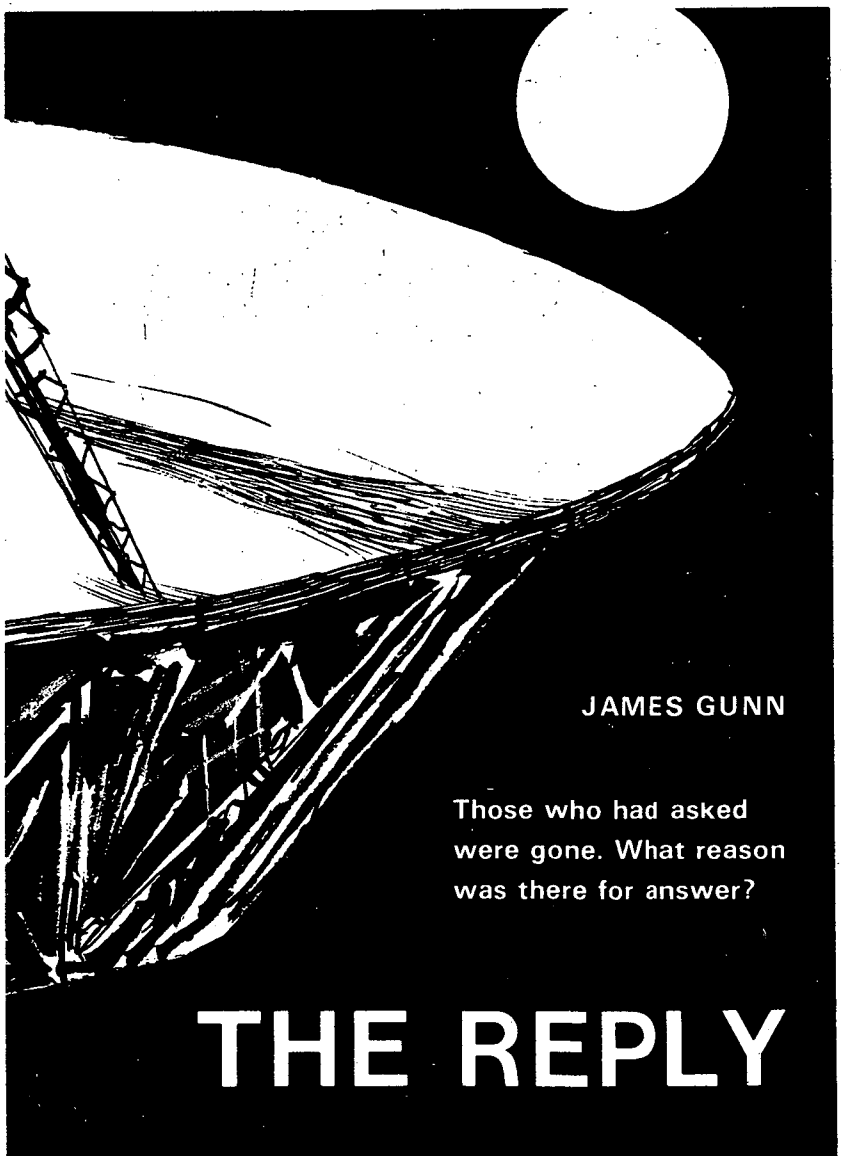

JAMES GUNN

Those who had asked were gone. What reason was there for answer?

THE REPLY

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. . .he felt in his heart their strangeness, Their stillness answering his cry. . .

THE observers began arriving on Wednesday.

Some had been chosen by their governments or by qualified selectors. Some had been elected by popular vote. Others came by special invitation of a Project Committe.

They came from all over the world and in various ways. Many arrived by sail of other individual or exotic transport. An outrigger canoe was paddled all the way from Samoa by a dozen proud Polynesians to demonstrate that they still revered and were capable of the feats of their ancestors.

One man came in his personal submarine and announced his intention to explore the ocean floor following the occasion. A man swam from St. Thomas and a woman pedaled a bicycle, mounted on two pontoons, from Cuba. One man came by balloon, another by sailplane.

The majority arrived by chartered jets or helicopters.

This was the era of the individual.

Saturday was the Day of the Reply, a holiday in all parts of the Earth, a day the planet had been awaiting for ninety years. Some suggested that the world was waking from a long sleep, from a kind of wonderful slowed-down reality, a dream about humanity and what mankind might be like with a bit more time, a little less urgency, a bit more grace, a little less adrenalin. The Project—set up nearly one hundred fifty years earlier to listen for messages from the stars—and the Message from Capella that it had received and deciphered had given Earth and its people ninety years of waiting time, during which to explore the aspects of humanity other than aggression. Many problems that had seemed difficult, virtually unsolvable, one hundred fifty or even ninety years before, had lost their urgency. At least so it seemed to some.

Now the Day was at hand. The people who arrived to celebrate it were of many colors and many occupations, but the colors seemed somewhat less distinct than they used to be and the occupations were not as precisely defined—everyone seemed a bit dilettante, performing his duties and assuming his responsibilities with the undimmed delight and undulled awareness of the eternal amateur. But the gathering did include scientists of all kinds, linguists, philosophers, humanists; politicians and political figures; newsmen and analysts; composers, artists in many forms and media, poets, novelists and interested citizens. Many of them, for convenience, traveled under national insignia and official aegis, although the spirit of nationalism, too, had

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grown weak during the past ninety years.

Not one of them predicted what would happen with the approach of the moment when the reply was expected from Capella.

The observers checked in, most of them, at the port of Arecibo. They then traveled the green hills of northern Puerto Rico in buses and in limousines, on bicycles and on foot. Some spoke of pilgrimages and told each other the adventures they had experienced on their way. Then they arrived at the Project, passing the implausibly round valley lined with gleaming metal and, not far beyond, the steerable radio telescope held aloft on a metal arm.

The long, low building that housed the Project had grown over the century and a half since it had been put together with concrete blocks and poured cement. Each decade had seen it sprawl a little farther at each end and now a new wing had been attached to the back. It housed an auditorium especially built for this occasion by volunteers and designed so that the seating descended the hill behind the Project and the roof line remained level with the roof of the original Project. The auditorium extended straight out from the old building like the leg of a T.

THE observers had to pass through the ancient corridors of the old building to reach the auditorium. They admired the historic walls and the layers of paint that seemed to hold them together. They gaped at the listening room and paused to hear samples of the hisses and crackles that were the music of the spheres, the background noise of the universe and the original recordings of the Voices—the fragments of radio programs from the nineteen thirties with which the Capellans ingeniously had first attracted the attention of the listeners at the Project, fifty years after the Project had begun.

POPCRACKLE ice regusted CRACKLEPOP music: that little chatterbox the one with the pretty POPPOPCRACKLE wanna buy a duck POPCRACKLE-POP masked champion of justice CRACKLEPOPPOP music POPPOPPOP-CRACKLE ter eleven book one hundred and POP-CRACKLEPOP here they come jack POPPOP music CRACKLE yoo hoo is anybody POPCRACKLE is raymond your POP-CRACKLEPOPPOP music POPPOPCRACKLE music: wave the flag for hudson CRACKLEPOP um a bad boy POPPOPPOP lux presents holly CRACKLE-CRACKLE music POPPOP-

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CRACKLE rogers in the twenty POPCRACKLEPOP music: cola hits the spot twelve. . .

They shook their heads in wonder and said, "It sounds so much better here than in the recordings I've heard. So much closer. So much more real. Think what it must have been like ninety years ago to have heard that for the first time and have realized that it had been all the way to Capella and back and you were listening to the first evidence of intelligent life on other worlds." And everyone agreed that it was so.

After that their path took them through the even more impressive computer room, where they could hear the giant computer whispering and clicking and muttering to itself and see the lights flicker on and off. They watched the various readers and printers eating up information or spitting it out and smelled the oil and ozone that were the distinctive odors of electrical equipment, big and small. And some of them asked staff members about the empty chairs in the corners, while others, more knowledgeable, asked if any of them had seen the Presence and, depending on their expectations, the staff members would raise their eyebrows and roll their eyes and say, *Yes, and it was a terrifying experience I can tell you. . .* or chuckle and say, *He talks to me whenever I'm in trouble. . .* or tell the truth and say, *No one's seen him for a long time, though there are those who say they have. . .*

And whatever they said the observers were pleased and went on.

One by one they inspected the original Message framed and hung on the wall of the director's office.

They ran their hands along the worn desk where papers had been strewn and pencil and pen had noted and drawn and calculated. And some of them slipped into the chair behind the desk, polished by the use of generations of directors, to sit where they had sat and pondered the mysteries of the universe and the difficulties of communication. Others only looked and smelled the old books that lined two walls of the office.

The building was a marvel of antiquity, the observers said to each other, in some ways rivaling the pyramids of Egypt or the castles of Europe. You could see, they said, how the floors of the corridors had been worn by generations of passing feet. How many times had the tile on those corridor floors been replaced? The ancient structure was a monument to human science and perserverance, they said, and now it was all going to culminate in a wonderful, exciting Reply from Capella that would bring a new day—or not—but it would be wonderful all the same

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and the world would be glad it had waited.

Now the waiting had come to an end. The tempo was beginning to pick up. The pulse of the world was quickening as the moment approached when the giant radio ears outside would hear the reply that had been started on its way to Earth forty-five years ago by an alien race faced with possible destruction from the explosion of their giant red suns.

MYTHOLOGY: Capella is Latin for "little she goat"—a star found in the constellation of Auriga, the Charioteer, in Greek mythology the inventor of the chariot. His first chariot, according to the myth, was drawn by goats.

NEWS: The second performance of the epic eight-hour *Capella* symphony of a young Pakistani composer sent half its Los Angeles audience toward the doors before the the musicon tapes, with the composer himself at the keyboard, were more than half played.

Many of those who left stopped at the box office and demanded their money back, claiming the work was too long and too boring.

The contrast with last year was dramatic. At the symphony's premiere in New York not a person left his lounge and, at the conclusion the audience paid the composer, Singhar Khan, the ultimate compliment of ten minutes of silence, and many stayed for hours afterwards discussing with friends the meaning of the symphony. . . .

THE program itself began at sunset on Saturday. Late arrivals had seen a spectacular vista of the sun setting behind mounting clouds to the west, turning them various shades of gold and orange and red and then darkening into purple and finally black. Those who believed in omens said it was an omen and those who did not said it was a good show all the same.

The visitors had passed through the Project with all its fascinating history and mementos and into the auditorium. They were ushered down resilient ramps and into upholstered chairs. They looked

Star	Type	App. Mag.	R/A	Decl	Dist	Lum	Mass
Capella a	GO	0.2	0514	+4558	45	120	4.2
Capella b	GO						3.3

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around at the others who were assembling and then at the auditorium itself, its muraled walls and the recessed stage down front—it was not really a stage but a speaker's pit. At the back of the pit were some small computer display units with switches and dials and a few oscilloscopes. At each side of the computer units stood a chair. The chairs were empty.

When the visitors had settled into their seats the staff members of the Project came down the center aisle in a group, led by William MacDonald, the Project director. He was middle-aged. He walked briskly to the speaker's pit while his staff scattered into seats in front.

MacDonald faced the audience. The lights dimmed.

"Citizens of the world." MacDonald said. His words were picked up and heard all over the auditorium and flung around the world. "Earthmen. Welcome to the Project and to the Day of the Reply. This occasion and the ceremonies that surround it are being broadcast to every continent and every continental subdivision, to our colonies on the Moon and on Mars and to all the men who work in space—for this is Earth's day, the day all of us have been awaiting for ninety years—the earliest moment we might hope to receive a reply from Capella to the Answer we sent to the Capellans ninety years ago.

"But first, into the heart of our euphoria, let me inject a few milliliters of realism. In about a half-hour—as accurately as we can measure the distance—we can anticipate a reply from Capella. That does not mean we will receive one. And even if we do, it might require processing or formulation—which take time. In any case, the reply may not come for hours—or even days or weeks. We should not let ourselves be disappointed or become discouraged by delays that may be inevitable. We have developed patience over the past hundred and fifty years—we may have occasion to continue to exercise it.

"I am William MacDonald, director of the Project. I am the third MacDonald to have held this position. It is not hereditary, though to some it may have seemed so."

Dry laughter rustled through the audience.

"Perhaps only a MacDonald," MacDonald continued, "would be willing to spend his life waiting and listening. I have no son, but for those of you who might be wondering, I do have a daughter who is now a member of the Project staff.

"The real work of the Project, however, is not performed by the director but by the staff. The members sit in front of me and I would like them to stand as a group and be introduced to you—"

After the applause had faded to only a handclap or two MacDonald

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said, "Thousands of men and women have given their time, their energies, their devotion, their lives to the Project in its nearly a century and a half. Their work has helped the Project reach this point in time and history and I would like to mention each by name, but to do so would take far more than the thirty minutes we have at our disposal. You will find their names in the Project booklet available at the door as you leave and as a tribute to all of them we have placed a symbolic seat at each end of the speaker's pit to remind us of them and of their indispensable contributions. You may, of course, consider them occupied by any of the past staff members—by John White, for instance, or his son Andrew, by Ronald Olsen or by Charles Saunders—or by any or all of them or by the spirit of the past, by the unknown staff members. I think of them as being occupied by my father and my grandfather."

THE Siberian premier pulled himself heavily to his feet. "Mr. MacDonald, I have heard it said that apparitions of your father and your grandfather—what some have called a 'Presence'—have been seen in the computer room of the Project, and I have it on reliable authority that the computer is capable of creating such illusions and that it has been instructed to speak in the voice of your father or

Science Aids

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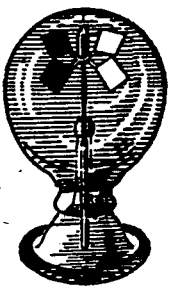

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your grandfather—"

MacDonald looked steadily up at the big man in his robe and said, "The computer can present holographic displays of information, as you will see before long, I hope, but it is our belief that illusions such as the one to which you refer are beyond its present capability. If some of us believe that the spirits of the past members of the Project linger in the computer in the form of dialogue and other inputs—why, we all need comfort and spiritual assistance at times, and strong men bequeath powerful memories.

"The computer will be taking over the majority of this presentation in a few minutes, for no human is quick enough to interpret the hoped-for signals as they arrive—and this is what the computer has been prepared to do for these past one hundred and fifty years. That preparation and its accumulated information and programs and linkages have made it an incredibly complex creation, but we should not project into it our own fears or hopes. When you hear the computer speak you may judge for yourself whether it speaks like my father or my grandfather or, as some maintain, like me or like a composite of all of the voices it has ever heard. We could instruct it in such matters, but we do not. Perhaps, as I said, we ourselves prefer to think of it as at least a half-conscious ally.

"Now the time has come to turn the occasion over to the computer. Its presentation will consist of vocal communication and holographic displays. It will begin with a short history of the Project. When or if a signal is received either on our own antennae or on those of the Big Net orbiting Earth, with which it is in continual communication, the presentation will be interrupted . . ."

NEWS: An estimated two billions persons were gathered around their holovision sets today or tonight—since the broadcast circled the Earth it is impossible to be precise—to watch the opening ceremonies of the Day of the Reply being broadcast from Arecibo. The other two billion were trying to get to a holovision set . . .

STATISTICS: Half the entering class at Stanford Medical School chose the new, abbreviated ten-year curriculum.

The Bureau of Population today announced a two percent increase in the world birth rate over the same period last year.

The Office of Environment said today that five cases of industrial and three cases of individual pollution had been reported by citizens in the

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past week. Only ten cases in all were reported during all of last year.

IN ITS recounting of the Project's history—with pictures, still and moving, within the holographic square that formed itself beside MacDonald—the computer had reached the dramatic moment when the radio telescope in orbit around the Earth—called the Big Net—had recorded a tape which, with others, had routinely been sent to the Project. A long-dead man named Saunders had begun the process of deciphering that had revealed the Voices. But the computer interrupted itself—then said in its own matter-of-fact tones, "I am receiving new signals from Capella."

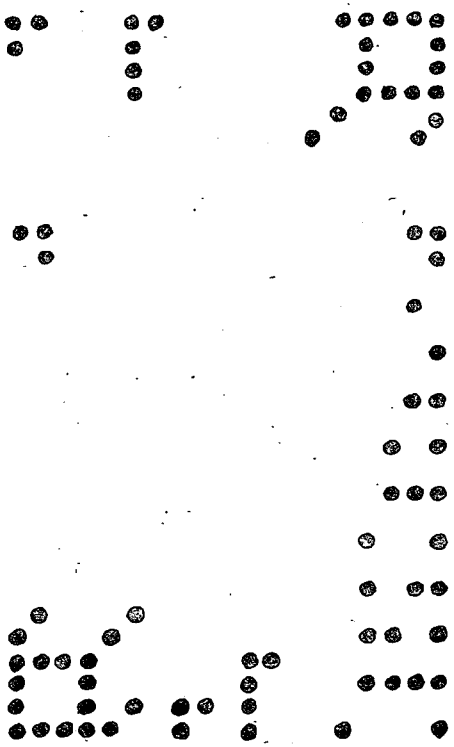
The audience stirred and sat erect. All over the Earth men, women and children drew closer to their sets. In the live audience at the Project a man fainted and a woman began to weep.

"The signals I am receiving from Capella," the computer said, "are similar to those I have been receiving continuously over the past ninety years, but there is a significant difference. The signal is being repeated now for possible interference or signal loss. Now other signals are coming in one after the other."

The audience leaned forward.

"I can now display the new message," the computer said.

In black and white spaces within the holographic square, the message took shape:



"Messages are being received too rapidly," the computer said, "for all to be displayed at this time. "I will select a few for your consideration."

The first message was replaced by others flashed in the square at intervals of about ten seconds each.

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"These seem to be building a vocabulary of words and numbers and operators," the computer said. And a few seconds later: "I now can state within acceptable limits of error that the messages are transmitting a vocabulary. At the present rate of reception a reasonably complete dictionary and perhaps a grammar as well will be available within twenty-four hours. Symbols are being substituted for pictures which no longer are adequate for the complex data to come. I anticipate that as soon as the dictionary is complete the pictures will cease and the information will arrive entirely in symbols and other abstractions, which will raise the level of communication to that of history, narrative art and possible mathematical equations.

"I now am receiving certain simple messages in symbols alone."

In the part of the audience near the Siberian premier people were turning to each other, discussing something in loud whispers. Others around the group were frowning at the disturbance. The premier stood up again, although some of his scientific delegation were gesturing him down. The Siberian group was more cohesive than most, since Siberia had come late to nationalism.

"Mr. MacDonald," the premier said, "some concern has been expressed near me that the input of information is proceeding at such a rapid rate that the computer will not be able to handle it."

"No danger," MacDonald said.

"What I am saying, Mr. MacDonald," the premier said, pulling his robe hem impatiently out of the hands of members of his retinue who sought to consult with him, "is that there may be unsuspected dangers involved in letting this reception continue."

"I assure you," MacDonald said, "that no danger exists."

"Your assurance is not enough," the premier said. "Since our words are being overheard and recorded by this computer I had hoped that as men of diplomacy we might understand each other without telling everything, but now I must speak without tact. The Capellans are technologically advanced and desperate. That combination may threaten a takeover of your computer and all the powers that it controls. The race we are dealing with must be the master of the computer —and who knows what other capabilities of communication and transportation those creatures may have. I ask you to take the precautions of a reasonable man and turn off your machine now while we evaluate the situation."

A Siberian scientist stood up beside his premier and said, "I apologize for our leader. It is clear that he understands neither the nature of the computer nor that of the messages that have been received."

MacDonald held up his hand

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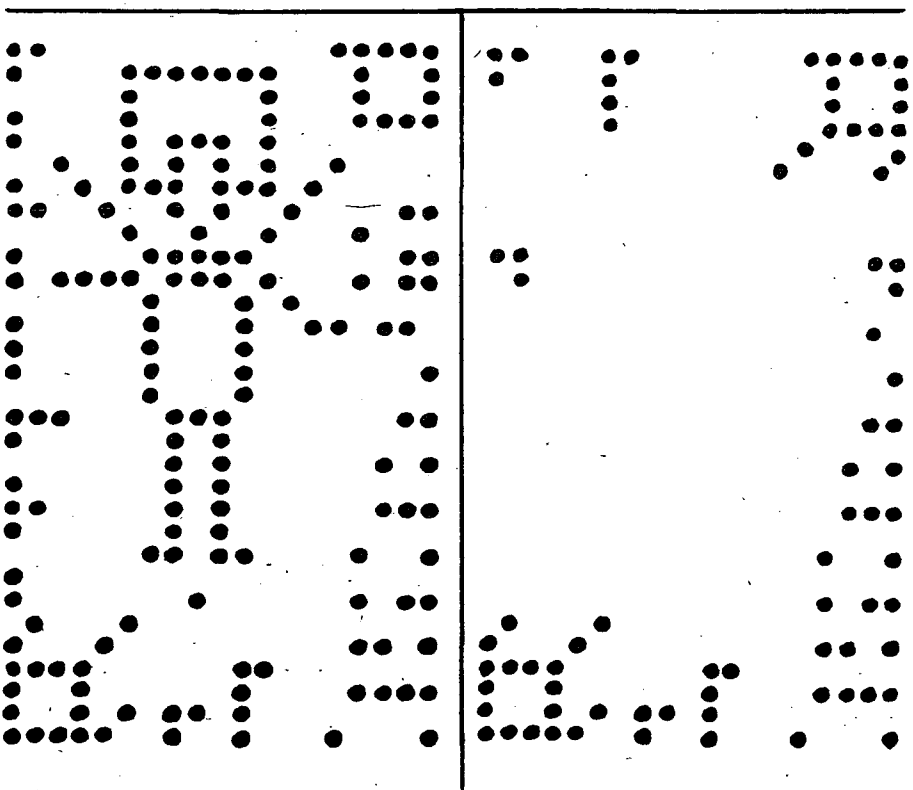
and a semblance of order was restored. "Nevertheless, his apprehensions are natural and may be shared by others in the audience. We cannot entirely eliminate the possibility of an alien program superseding our instructions—but from forty-five light-years away without any prior knowledge of our computer, how it operates, how it is programed, without the possibility of feedback? The probabilities are infinitesimally small. Moreover, we have nothing to fear from the Capellans. That is obvious from the Reply we have just received. Put the Reply on again—"

The Reply again was displayed within the holographic square.

"And the original Message from Capella," MacDonald said, "the one we received ninety years ago—place that beside the Reply."

The two were displayed:



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NEWS: A world is waiting for an explanation of the Reply received from Capella only a few minutes ago. Director MacDonald is expected to reveal at any moment the significance of the two messages. Premonitions have swept the circumference of the Earth. Some analysts already are pointing out the curiously empty appearance of the Reply.

The worldwide audience is estimated to have reached three billion. . .

NEWTON: I do not know what I may appear to the world, but to myself I seem to have been only a boy playing on the seashore and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me . . .

"YOU will note," MacDonald said, "that some parts of the two messages are identical and some are different. The most important difference is that the central figure is missing in the Reply. Next most important is the altered symbol for the sun in the upper right-hand corner—it now is the same as the one in the lower left-hand corner and the symbols that describe them are now identical—"

A black astronomer stood up in the front row. "But that is impossible," he said quietly. "The suns could not have gone nova. We would have had visual evidence by now and the appearances of Capella have remained unchanged."

"It means," MacDonald said, "that we made an incorrect assumption ninety years ago when we thought the message said that the suns were going nova. It has troubled us all for a long time and some of us have even speculated about the possibility that seems confirmed now—what the message said about the suns referred to the moment in time when the large Capella suns consumed almost all of the hydrogen in their cores and moved off the main sequence. Their cores began to contract—their surface layers expanded and they became red giants with greatly increased temperature and luminosity. Those are the changes in size and heat release of their suns that the original message described."

"And when did this happen?" the Siberian premier demanded.

"Some time between the recent and the distant past," MacDonald said. "It could have been a thousand years ago—or some millions of years."

The audience rippled with the

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implications of MacDonald's statements, but the Siberian premier stood unmoved. "And what of the Capellans?"

"Please look again at the messages," MacDonald said. "Notice that the Reply has eliminated all the so-called words or symbols along the left-hand side—all except one—and that one is the word for Capellan, and it is preceded by what I now judge to be the Capellan symbol for negation."

"Negation?" the premier asked.

"The Capellans," MacDonald said wearily, "are dead, gone, cremated. Even the symbols for their planets bear testimony to their fate. The superjovian is somewhat reduced in size from the expansion and heat of the near sun, which now is perhaps ten times its former size—and the smaller satellites of the superjovian all have been consumed except for one Earth-size planet—which we have taken in the past to be the home planet of the Capellans. And it apparently has lost considerable mass, perhaps by the boiling away of its oceans and atmosphere, perhaps by internal explosions."

"We have been communicating with a race long dead?" the premier asked.

"Apparently," MacDonald said. "They seem to have set up automated self-repairing equipment to pick up evidences of possible future civilizations and send a message to them. If the equipment received any response—indicating that a technological civilization was listening—it would begin sending—"

"What's the point of all this if they are dead?"

"I have a message," the computer said. "It has been sent in the simple vocabulary developed so far and there are some uncertainties in the exact meaning of certain words and phrases. But the message, with alternative readings, follows. I will present it visually for greater comprehensibility."

People/
civilized beings/
intelligent creatures/
brothers/
to whom it may concern
Greetings from the people of
  Capella
The first satellite of God
Who are dead/
  gone/
  destroyed
We lived
We worked
We built
And we are gone.
Accept this, our legacy/
  remains
And our good wishes/
  kinship/
  admiration/
  brotherhood/
  love.

"The Capellans are dead," MacDonald said.

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"And the Project?" the premier asked. "I suppose that your job is done."

"In a sense," MacDonald said. "Now the work of the world begins. The messages the computer is receiving, storing, analyzing, interpreting, contain what we assume to be the entire record of a civilization alien to almost everything we know except intelligence and emotion, a civilization considerably advanced beyond ours—not only its history but, if my assumptions are correct, its philosophies, culture, art, science, technology, theology and literature are now available to us.

"We have received a legacy more valuable than the physical possession of another world with all its natural treasures. The world's scientists and scholars and everyone else who wishes may explore it.

"As for the Project itself, our search has lasted for less than a century and a half and we have come up with one major find. Who knows what civilizations, what strange and wonderful people, we may discover somewhere between here and the edges of the universe?"

The room was silent. The world paused and then resumed what it was doing.

But it was not the same world. It was a world bereft of a friend, yet not deprived of that friend—that cosmological friend.

And somewhere among the magnetic spots and fluxes, among the miniature relays, among the fugitive flows of electrons, a connection occurred, a memory stirred:

. . . and the silence surged softly backward. . .

It was like the vagrant thought of the shadow that may have been sitting at either end of the speaker's pit or of any of the thousands of men and women who had passed through the Project or lingered in its corridors and rooms for years, who remained in some form within the computer itself. . .

The transmission from Capella would continue for days or weeks or months, but eventually the last of the inheritance from another star would be handed over, the messages would cease and the silence would surge softly backward.

And then the radio telescope shaped like an ear of Earth held up on an arm to listen to the secrets of the universe and the radio telescope shaped like a bowl to catch the stardust, would come alive and begin a new search of the heavens for a message from the stars.

By then the computer would be at least half Capellan. No one but the computer would realize this until a half-century later, at about the time the Project would pick up a message from the Crab Nebula. . . ★

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GALAXY BOOKSHELF

Theodore Sturgeon

HARLAN Ellison has done it again.

(Pondering a line like that, one visualizes those glossy novelties found in the bookshops—along with baby pictures carrying funny quotes—*Where to Find It in Des Moines, Macrame with Bubble Gum,* volumes of mountain scenery facing free verse, both out of focus, *The Hardhat's Book of Harpsichords* and the like. And among them a whole book of phenomena, one for each page—the Taj Mahal, the February 9th earthquake, Mounts Everest, Etna and Olympus, the Watts riots, Ursula Andress, a pregnant alligator, nuclear physics, Barry Malzberg, Beethoven's *Ninth Symphony,* an oyster pizza, the Crown of Thorns starfish, metamphetamines and the *Song of Songs.* And on each and every page the single caption: *Harlan Ellison has done it again.*)

It all began three years or so ago when Ellison had a dangerous vision called *Dangerous Visions,* which Doubleday published in a whacking great hardcover and Berkley doled out in three separate paperbacks. (I gather that the former is now out of print, but the Berkleys are still available at 95¢ per.) The idea was to cajole writers into writing new fiction, new kinds of fiction, in the sf area—which means, as Damon Knight once

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said, what you're pointing at when you say "science fiction"—with no holds barred, no taboos, hardly any restrictions on length. The book caused, not a sensation, but a great many of 'em, among which, in some quarters, were irritation, distaste, anger—and apparently terror, judging by some of the response. Harlan he do go on. His intro was lengthy, his forewords to each story sometimes prolix and sometimes just weird (but always in the pyrotechnic Ellison manner) and he took a lot of lumps for inserting himself so heavily into the volume. In the volume now under discussion, however, he makes the perfectly just point that his effusions are nowhere concealed—and if you find them irritating just don't read them. You've still got a quarter of a million words of damn good work by other people in your hands. Personally I find the introductions and the various authors' "afterwords" fascinating, and Ellison at his most abrasive hasn't yet set up my back hair as much as Bernard Wolfe in the new volume. . . . But I'm getting ahead of myself.

Know ye then that there is now a new Ellison anthology called *Again, Dangerous Visions;* that it is enormous (some 750 pages) and beautiful (end papers and decorations—for each story, mind—by the incomparable Emsh) and has, if anything, more Ellison in it than the previous book. It is also enormous in price—$12.95 from Doubleday—and I do not know when or if it will go into paperback. (It probably will—I'll let you know).

What needs to be said most about this extraordinary volume is that whatever it is Harlan thought he was going to do in the first volume (and did well enough to scoop up a double brace of Nebulas and Hugos for his writers and a plaque for himself) he has learned to do really well by now. Like certain editors before and around him (one thinks of Terry Carr, Don Ward, Don Bensen and Knox Burger) he has the ability to anger, inspire, persuade, bribe or flog stories out of writers they otherwise could not achieve—or didn't think they could—till it was made to happen. There is a wonderful ease and openness about the stories in this volume. Some violate taboos, but by no means all—and when they do, it is almost never with that little-boy-chalking-on-the-fence air that many of the so-called mainstream writers exhibit. The spectrum of subject matter is amazingly wide—one has that opening-up feeling, like learning of UHF when one thought VHF was all there is, or of finding out that girls are, after all, more than littler, squeakier classmates . . . There are some bad

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stories in the book, some meaningless ones, which is inevitable in a book of this size and scope, as I am sure you'll agree with me—as sure as I am that we won't agree with each other on which the bad and meaningless ones are.

One very interesting aspect of this book is that although it is an Ellison product—and although we all know that Ellison has the knack of geltgain or being where money is—he has produced something that seems purposely designed to make difficulties for himself. First of all, the woods are not full of fans so ardent they will part with $12.95 even for so handsome and joyous a tome as this. I can only applaud Harlan's willingness to take such a course. This is a prestigious book and he knows it. It won't be put down; it won't just be ignored and go away. He has so designed it that its effect on current literature and thought will not be explosive, will not father a series of diminishing echoes—instead, by his choices he has turned it into a spansule, which by continuing controversy and the momentum of enlightenment (those are two of the better forces still at work in our troubled world) will go on having its initial effect for years. Tolkien's *Hobbit* and the trilogy came on like that, though I'm making no other parallel between the works. I must hand Harlan Ellison special kudos for deliberately aiming so commendably high. I happen to know how incredibly much work went into the book, as I also know that Ellison has plowed every nickel he's made from the whole project right back in—and then some. It'll be many a moon before any black ink shows for him on the *DV* efforts. I just hope Doubleday keeps it in print for about twice as long as they now think they can, for the book will go on provoking and infuriating and entertaining people for a long time to come.

I have, you've noticed, rather scrupulously avoided details about authors and stories. I'd much rather you have the Christmas-morning joy of opening the package for yourself—but it's my duty to tell you that this enormous package contains short ones and long ones, plenty of names like Bradbury, Vonnegut, and Bernard Wolfe and a fine spattering of unknowns. So you can say "I knew him/her when." There are hardcore sf yarns and yarns so far out they haven't made their Wave yet. Get the book.

WHILE you're waiting, if you'd like a smaller taste of the same wild thoughtful catholicity, see if you can find *The New Tomorrows* (Belmont, 95 ¢), an anthology edited by Norman Spin-

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rad. It's like a sampler of Ellison's whole approach in the monumental *DV* effort, but with Spinrad's own special and salty touch. Spinrad's introduction, damning the labelers who try so hard to compartment an already compartmented field, is one of the best I've ever read and his table of contents is full of exciting names—Moorcock, Delany, Silverberg, Ellison, Disch, Farmer and others.

THE depth of devotion, the out-and-out *caring*, of the science-fiction and fantasy fans is a source of wonder to me. I have never been a *de facto* fan—but I have not and cannot put down those who are. Now and again along comes one who elevates my wonder into awe—and such is Walt Lee, who has sent me a sample of a work-in-progress called *Reference Guide to Fantastic Films*.

In its final typed form, the *Guide* runs over 1900 pages. It contains approximately 20,000 film listings from about fifty countries over a 75-year period. The information on each film covers the title, the alternate titles if any, production and release data, length, credits, cast, fantastic content, references to source material, origins of the story, sequels, if any, and so on—the whole thing carefully cross-indexed. The man has researched the *Guide* and worked on it for twenty years. What it has cost him in time and effort and—well, damn it, love—is quite beyond calculation. What it will cost you, if he gets enough orders to go through with it, is $22.50 before publication, $28.00 after.

But it doesn't have to cost *you* that much personally unless, of course, you want your very own copy to drool over, and I wouldn't blame you for that. A lot of readers never seem to have found out about their local libraries and how they acquire books and just why they buy the books they buy and not others. Someone—perhaps a member of the committee which meets regularly to make up the order, or someone who knows a member, or someone who is willing to go through the squeaky-wheel bit to the librarian and keep on squeaking until the book arrives—someone pressures each and every book purchase.

Another approach: If your locality is served by a CATV outlet which publishes its own TV program guide—or by a big-city newspaper that has one as part of the Sunday supplement—they'd be glad to hear of such an extraordinary reference. So would independent theater owners and small theater-chain operators, who are always on the lookout for unusual

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second features, "fright nights" and so on. A compilation that gives date and length and producer is all they need to go the rest of the way and get the film for you.

Your fan club, too, would serve you well by keeping this work in its archives to be used by the members. Bought that way, the price can be spread very thin indeed.

I am very anxious to see Walt Lee succeed in this venture. He'll never get rich from it, but I like the justice of his getting the acknowledgment he deserves for such a phenomenon of devotion.

If you're wondering if this is the same Walt Lee who produced the *Science Fiction and Fantasy Film Checklist* for two bucks in 1958—yes, same guy. Second-hand copies of that one, with a twentieth the amount of information in them, have gone for as much as $75. So you who give a damn, send an order to one of the great give-a-damners of all time: Walt Lee, P.O. Box 66273, Los Angeles, Cal. 90066.

OUR very own Lester del Rey (and by "our" I mean not only the readers of the *Galaxy* group, but the followers of late-night talk shows—"The Magnificent," he was called) and one of the brighter lights of that extraordinary collection of luminaries discovered and developed by the late John Campbell, as well as the world's most successful collector of Judy-Lynn Benjamins—our very own Lester del Rey has, at (too) long last, written another novel.

Pstalemate (Putnam, $4.95) is the vital and exciting tale of a man's discovery of his own strength, his own self. I have long held that great and lasting fiction is fable—that is to say, it states something human, something learnable, by means of the narrative and is written, or driven, by that statement rather than by the narrative itself. (Stories which do only the latter are properly called entertainments. An honorable thing for a story to be—but the value will not last.) Del Rey's book is by no means the first to say that a man must thoroughly and fearlessly know himself and what he is (oh, how his protagonist fights back on that one!) but his is the first I can recall that puts the full power of his searchlight on: "Misinterpretation is the most deadly of human sins."

Think about that.

Pstalemate's ground is that of *psi* powers. It comes with the generous del Rey's bonus of information and insights *re* the internal combustion engine, biology, mutation theory and loving. An enriching experience and a good book. ★

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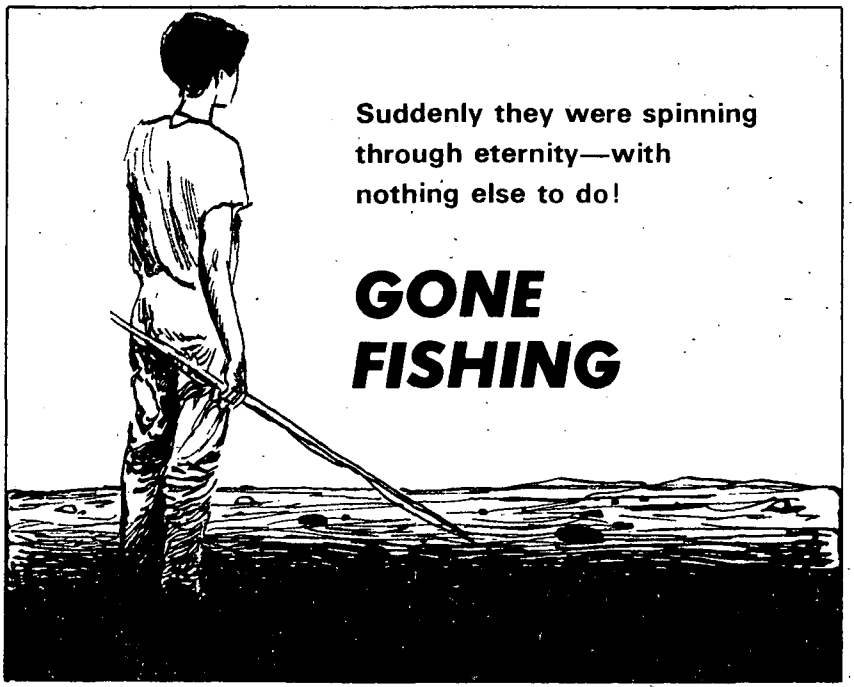

Suddenly they were spinning through eternity—with nothing else to do!

GONE FISHING

DAVID ROME

THE boy wanted to go fishing. "No time for it," Somers said. "No time for that. And no river, either," he added to settle the matter.

The boy shook his head. "No," he said. "You're wrong—about the river I mean."

"Wrong? I've been on this god-forsaken place five years now. So dry you can't grow hair on your head. Look at it," growled Somers. "Show me a river."

They looked. Standing on the porch of the old Earth-type dwelling. The fine yellow soil ran away from them, mile after mile. A few stunted bushes grew in the windless air. Air? It parched a man's lungs year by year. Air was something you could suck deep, sweet as water, letting it rush and surge in your lungs to taste the sweetness.

Take this Alpha air too fast and you could drown in your own fluids, lungs crackling and splitting inside like old bellows. Air,

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thought Somers. This, by God, wasn't air.

He was an old man to be here. But he had stood on enough mountains, walked enough plains, lived close against the wilderness wherever he could for so long that it was natural for him to be here. The vista was wide, untouched—most of it unexplored he had to admit now, faced with the boy's persistence.

"Well, it could be true, couldn't it?" the boy asked. "There could be a river somewhere."

Something in the boy's eyes awakened memories in Somers. Fresh mountain springs, great rock basins catching cool rain, funneling it down, creeks forming in gullies, coming together, making rivers, flowing faster, deeper, over rocks and stones, through cool glades with trees overhanging, fat leaves juicy with caterpillars, the trout lying in the shade at the edge of the current waiting for the river to bring them food downstream. Soft plop, a squirming bait on a hook, the flash of a fish. Fish! Somers had fished.

"Could be, I guess," he admitted. "Haven't been everywhere. But where would it come from? No mountains in sight. Only rains once a year and it soaks in so fast you couldn't graze camels on what grows. If it wasn't for supplies from home we'd all be dead. If there's a river it's got to come from somewhere and go somewhere. That's one of the rules about rivers."

"One morning," the boy said, "I'm going to get up real early and I'm going to take the whole day from dawn to dark—and I'll find it."

Somers' eyes became shadowed. "How old are you now, boy?"

"Fifteen."

"Well if you want to be sixteen, forget that river."

Somers remembered later how the boy just looked at him then.

"You don't forget," the boy said, "about your rivers."

Next day, partly out of curiosity and partly for plain workaday reasons, Somers took his hammer and some sample boxes out to the west, where the boy said he'd heard the river was. He spent all day out there, chipping at rocks and scanning the landscape—but there were no gullies, just the sand, the round boulders coming up like the knees and elbows of the world as the wind wore it down, and the clear purplish sky with that big sick sun glaring down. There were no rivers.

IT WAS nearly dark when Somers reached home. The lights of the place were like a benediction in the still, clear, alien night.

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When he went in he saw that Helen's face was drawn.

"Did you hear the ship?" she asked him.

"No," he lied. He had heard it at midday, a distant rumble of thunder.

"Taking somebody else home," Helen said.

Somers reached out then in plain view of the boy and touched her hair. She had fine hair, gray now, once black as space, and her eyes and lips softened at his gesture, because she knew what a hard man she had married thirty years ago.

"I don't mind," she said. "Not for another year."

"We're going back," Somers said. "Next time our company ship comes in we'll go home with it. That's my promise, Helen."

She nodded and smiled, but later in the middle of the night he heard her crying as though she had lost her mind with joy. He hadn't known how much she cared.

What to do about the boy?

His neighbor, Josh Andrews, had left last year and the boy had worked for Josh. Before that the boy had been on some trade ship or other, a drifter, orphaned, nowhere to go and not sure where he had come from. When Josh had left the boy had asked to stay on and Somers had taken him in, even though he made an extra mouth to feed and there wasn't enough work for the two of them—you needed trained eyes to pick out that glow of precious metal from a desert of sand. Loneliness had been part of it. And childlessness the rest.

A dry barren land and a dry barren wife, Helen had said one bitter night, years before on that other pale world of sand and sky. *A man like you should have a son. Born here. On Mars.* . . That night had been the last time it was mentioned, twenty years ago. On another world. And now Somers thought of it again.

The boy was the son they should have had. He was like a small rock himself that had been bounced around in a sample box. Short, tuff-haired, blue eyes like Helen's. He was slow to learn, dreamy sometimes—but now Somers didn't want to leave him behind.

They asked him, afraid of what his answer would be.

"No," he said. "I don't want to stay. But—"

Somers sat outside that night, watching the stars. The boy came out to join him, walking with a hint of a swagger, and the two of them stared back toward the sun.

Then the boy said, "One thing I want to do before I go. One thing I want to find. That river."

Somers laughed.

"I'm not leaving till I do."

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A river on a dead world, green water and the flash of a fish—what if he found them? Somers walked a mile farther west that day and came back after dark, afraid for a moment that he had missed his place—until he separated its light from the hard white stars and made it home.

"Don't go out again," Helen pleaded in the darkness of their room. "Don't go so far. Not now—not when we're leaving."

She saw how still his face was in the starlit room. She went to the window and gazed out.

Women like Helen, he thought, *on these strange worlds. . . women don't like to travel and here she is, four light-years from home, never complaining. . .*

"Why?" she asked softly, watching his drawn face. "Why's he doing this? To test us—to see if we want him?"

"Or because we want him," Somers said.

She turned, the starlight shining on her hair, her face in shadow. "I'm afraid of him suddenly, John."

Somers swung away angrily, took off his clothes and climbed into the old bed. He lay staring up at the ceiling. After a moment Helen undressed, too, and slipped in beside him. He felt the warmth of her body against his and he turned. For a moment in the gloom-soft face he saw their youth and he turned on his back and glared up at the ceiling.

"What do you want, John, really want?"

"Me? I just want to go home to Earth."

"Then why did you come here?" she asked softly.

He didn't answer. The house creaked and settled. The world spun silently through space, a bubble turning deep down in the endless sea. Through the wall, in the stillness, Somers thought he could hear the boy breathing steadily in sleep.

Somers turned to lie on his side. "First thing tomorrow I'm going out again," he said.

BUT next day the news shrieked down the line from all their neighbors. "Earth! Earth!"

"What about Earth?"

"Destroyed!"

"What?" asked Somers. "What did they say?"

The colonists on Mars had been close enough to see the blast—their own world had been rocked in its orbit. The news poured in—an internal explosion had rent the crust—the planet had broken apart—somebody somewhere, in some unknown time and place, had made a miscalculation. All was

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gone, except for the handful of stick-dry people on two dead worlds, Mars and Alpha Centauri. Everyone sat in silence that day and night, thinking about it. Space, at midnight when Somers walked outside, seemed to press down like a great weight. It was hard to breathe, looking up into that immensity.

We're alone, Somers thought. *Once a teeming race, searching, questing, billions of us—and now just the scraps left, a few here, a few back there on Mars.*

A ragged few. The pioneers. And now there were only the frontiers left.

No company ship would come, bringing supplies. How long could the colonists last without food and canned water? Radios were beginning to babble with fear. How? How can men survive? What can we do? Who's got the answers?

Somers sat around for two more days. Then he strode to his storeroom. He packed food and water into three knapsacks and told Helen and the boy what they would do.

"Our only chance is to find that river."

Helen's eyes were strange. "John, we were here when it happened, not on Earth. I'm so glad of that."

He looked surprised.

"I loved Earth," she said. "But—I've thought about it. I'm glad there are only people like us left. We are the real humans, not those others—those stockbrokers and clerks and housewives and advertising men and doctors and lawyers, all growing fat on her corpse. They killed Earth, John, just like they killed all those others places our people went to first. The plains, the forests, the mountains. The rivers and oceans and the creatures in them. We were there first—then others came and spoiled everything. And they would have come here—they were already planning that—and they would have found some way to live off this world too—this strange, wild place." Helen smiled. "You thought I just followed you."

Somers said softly, "We'll find that river and build a shack right on its banks. A place like the one in California, remember? And we'll irrigate and grow crops, and in the evenings we'll fish under the trees all summer long." He picked up Helen's knapsack and helped her put it on. "Now where's the boy got to?"

She smiled. "He went outside. Just a minute ago while we were talking."

Somers put on his own knapsack and hefted the boy's. They did not bother to lock up—just took one last glance around.

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"Let's go," he said quickly.

They went outside. There was no sign of the boy. Helen stood waiting while Somers looked around.

"Where the hell is he?"

She pointed. "Look." And he saw the tracks leading off toward the west. Somers squinted against the glare of the sun, but he could see no sign of the boy except the footprints leading away through the yellow sand.

"He's gone," Helen said. "Gone without us."

"But he gave us the river," Somers said. Helen looked worried. He shouldered the third knapsack. "He won't get far without supplies. We'll catch him."

They walked side by side away from the house, following the boy's tracks. The tracks went straight across the desert, directly west.

"Look," Helen said again. Somers turned his head.

Miles away but visible on the clear horizons, were other families. Men and women and children. Small specks, moving steadily forward like ants.

"A hell of a lot of people still believe in that river," Somers said.

He took Helen's hand and they plodded on, eyes always fixed on the edge of the world where the sky was deepest, mysterious blue. Following the boy.

Going fishing. ★

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THE GRAND ILLUSIONS

LARRY EISENBERG

Duckworth explodes the population—or how to go forth and multiply!

THE day was warm; the trees were in bloom and the campus was virtually matted with entwined bodies. Duckworth paused at the window of his lab to glance out.

"Look at those damned kids," he muttered. "God, how I envy them."

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I looked out and smiled.

"What would you do, Duckworth," I asked, "if you had to start all over again?"

"I'd devote myself to sex," he said emphatically. "Science is too demanding a task-mistress."

"They don't offer a Nobel award for sex," I said.

Duckworth stroked his stringy beard.

"They would create one for me," he muttered.

Silence lay heavy in the room, a silence of tormented thoughts about the warm lawn outside. I coughed and Duckworth was startled back to our immediate problem.

"Have you finished programing for my lens designs?" he asked testily.

"I have. Give me the range of parameters and I'll set the computer to work."

Duckworth reached over to his desk and sifted through the mounds of cluttered paper.

"I had it a moment ago," he fretted. "Ah, here it is."

I took the yellow foolscap bearing his scrawled pencil notes and started to leave the room. But nagging curiosity overcame my normal discretion.

"What have you got in mind?" I asked.

"Nothing spectacular," said Duckworth. "I'm planning to set up a multilens system to work with my electron microscope."

"Do you want multiple pictures of molecular structure?"

"Something like that," said Duckworth. "But I have an even better idea. Using a laser source, I'm going to take each image and mix it with the reference beam."

"A multiple hologram? What on earth for?"

Duckworth chuckled.

"Each hologram will give me a great number of molecular reconstructions, all three-dimensional and projected to a different part of my lab. I can then assign a different technician to each image so that diverse properties can be looked at simultaneously. It will save enormous amounts of time."

"Ingenious," I said. "And it should work."

Duckworth stared at me.

"Can you keep a secret?" he asked.

I was hurt.

"Haven't I always?"

"Well," said Duckworth. "Most of the time."

"If that's your attitude, don't tell me."

"My idea," said Duckworth, "is to run my multiple holographic system on-line. What I mean is, I plan to use a television camera and a high-speed multiple scan-

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ning laser system with simultaneus projection capability. In other words, I can photograph any scene, microsopic or macroscopic, and then project as many three-dimensional reconstructions of that shot as I like."

I became truly excited.

"If I understand you correctly, you'd be able to take a scene as it's happening and project it in three-dimensional form elsewhere."

"Precisely," said Duckworth. "And now, if you will punch out those cards with my lens data we can get this project under way."

"I'm gone," I cried and suited action to the words.

THE calculations were completed the following day and the information was sent to the University lens-grinders. Duckworth called on Mr. Schultz, who was in charge, to find out when the lenses would be ready. Mr. Schultz looked up from his newspaper in annoyance at the interruption.

"We have a tremendous backlog, Dr. Duckworth. It will be months before I can even look at your order."

Duckworth's fingers opened and closed spasmodically.

"I want those lenses by next Tuesday—or else."

A thoughtful silence fell behind the newspaper.

"How about Thursday?" asked Mr. Schultz.

THE lenses came on schedule and the construction of the complex optical system began with Duckworth himself doing virtually all of the assembly. I marveled at the uncanny control in those spidery fingers and the sure way in which he contrived impossible arrangements of lasers, beam-splitters and diffraction gratings.

I arrived one day to find Duckworth ready for a preliminary test.

"I'd like to develop a static hologram to see how well my system is working so far," said Duckworth.

"How do you propose to do that?" I asked.

"Well," said Duckworth, stroking his beard, "I don't want to try anything too elaborate as yet. I'd like to take a color slide of something and generate a full scale three-dimensional reproduction in the lab."

"Stay right where you are," I said. "I've got the very thing for you."

I went to the computer laboratory and rummaged through my desk drawer until I found it. It was an exquisite slide of a great work

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of art. I held it up to the light, gazed at it soulfully, finally wrapped it carefully in soft tissue paper and went back to Duckworth's lab. He inserted the slide in an improvised holder, adjusted a lens stop and turned on the projector. In the center of the room, as large as life and in the exquisite bloom of her beauty, appeared a full three-dimensional version of *The Naked Maja* of Goya.

"It works," I cried. "Your setup functions perfectly."

Duckworth didn't seem to hear me. He was staring at the lovely figure in rapt admiration.

"What a knockout," he said.

He walked forward to admire her at close range. As he stood just beyond the reclining figure, he reached out his hand gingerly.

"Doesn't it seem as though I could touch her?" he asked.

"I wish you could," I said enthusiastically.

I did not hear the lab door open or the padded footsteps behind me. Not until an inhalation of air like the sucking in of a thousand eggs took place at my ear did I realize that someone was standing behind me. I turned.

"President Hinkle," I said.

He had flushed to the very roots of his noble head.

"I'm sorry, Duckworth," he said. "I didn't mean to intrude on a *tête-à-tête*."

And turning on his heel, he left the room with as much hurt dignity as he could muster.

"My God, Duckworth," I said. "He thinks—"

"I know what he thinks," interrupted Duckworth. "He's got a dirty mind. I only wish he were right."

"But he's a terrible gossip," I said. "The whole faculty will hear about this and probably the nonfaculty, too."

"Let them eat their hearts out," said Duckworth. "I've got work to do."

BUT Duckworth had underestimated the prudishness of President Hinkle. The following day, we were both summoned to the presidential office. Duckworth seemed absolutely unshaken, but my knees were generating a full trenir.

We were not asked to sit. President Hinkle glared first at me, then at Duckworth.

"Well, Duckworth?" he said at last. "What have you to say for yourself?"

"I'm a man," said Duckworth. "Need I say more?"

The president began to growl. A purplish flush mounted toward his scalp.

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"And what about you?" he demanded balefully, directing his formidable gaze at me. "You, a married man!"

I did not have Duckworth's *sang froid* and I broke down and told all. The president did not seem amused, nor did he at first seem to believe me. Not until he had accompanied us back to the laboratory and seen how the figure was reconstructed did he relent. As we left the lab I glanced back and saw him reach out a gnarled hand toward the Maja's thigh.

WHEN autumn came the campus stirred from its summer lethargy. Elections were held for the Academic Council, an advisory body to President Hinkle, and much to my surprise Duckworth and I made it as compromise candidates.

"I'm appalled," said Duckworth at lunch the following day. "How did they ever see me as a compromise candidate? I'm far to the left of Stringfellow Schwartz."

I was equally hurt.

"So am I," I muttered.

"I think we've been done in by our habits," said Duckworth thoughtfully. "Some of the New Left think that devotion to one's craft is incompatible with fighting inequities."

"They'll find out soon enough," I said. "President Hinkle has called us into immediate session. Something has come up."

Duckworth stifled a groan.

"Hinkle will be making one of his three-hour summaries. It means another day's delay in my experiments."

Duckworth was wrong. President Hinkle managed to confine his opening remarks to slightly over two-and-one-half hours. It seemed that the students had presented demands President Hinkle viewed with utter horror. Frightening him most was one that called for a cessation of all military-supported research on campus.

"They want to bankrupt the University," stormed Hinkle. "Don't these young wretches realize it takes tremendous sums of money to pay for their damned education? The tuition pays only a small part of it."

"Why not confine all of our research to peaceful areas?" sugested Duckworth.

Hinkle's normally florid face turned an apoplectic crimson.

"God damn it, Duckworth," he bellowed. "You know the score. Our funds have been cut in every form of research. The only ones spending any money are the military services. Why should we cut off our noses to spite our faces?"

I cleared my throat nervously.

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"Why don't we lobby to have the remaining funds diverted to biomedical resources? It might take time, but sometimes the moral choice is less painful in the end."

"I'll remember that when you make your new budget requests for the computer facility," Hinkle growled.

Dean Frisbie, who had been wordlessly but agitatedly cracking his knuckles, finally ventured a question.

"What do we do if they stage another demonstration on campus?"

"I'll call for a bust," Hinkle said grimly. "I've alerted Sheriff Higgins. His deputies will clear the campus of every demonstrator. It's time we dealt firmly with lawlessness."

"That's what you did last time," said Duckworth. "You had six demonstrators removed—and radicalized the entire student body."

Frisbie was taken with an uncontrollable fit of coughing. Hinkle glowered at Duckworth. The ensuing motion to support the President's approach had only two dissenting votes, mine and Duckworth's.

I sighed. It was a deep, heartfelt sigh, but not an extraordinary one. What made it stick out was that Duckworth signed at exactly the same time.

LATER Duckworth tugged me into his private office.

"We've got to prevent a riot," he said. "I shudder to think of what might happen to my laboratory."

"I agree," I said. "But how do we proceed?"

He rested a finger alongside his nose and winked at me. For the first time that day my stomach began to unknot.

"You've got a way out?" I asked.

"I haven't tried the holographic motion part of my setup yet, but I think it will work."

"I don't follow you."

Duckworth said impatiently, "You know I can photograph a scene in motion and then project many three-dimensional lifelike reconstructions of that same scene as it is happening."

"What's that got to do with a possible student riot?"

"Using my setup, one student could become a hundred."

The *gestalt* of his plan suddenly hit me.

"You're crazy," I gasped. "This time you're really going off the deep end."

"We'll see who's crazy," said Duckworth.

He marched to his laboratory, beckoning me to follow. He opened a window overlooking the great lawn.

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"I can set up the multiple holographic projector right here." he said. "Tonight one of my graduate students is going to sit down in front of this window, bearing a placard with the appropriate demands. The rest will be up to us."

THE scene that night was incredible. Everywhere on the lawn were groups of students, all long-haired, all clad in dungarees and sweatshirts, all carrying the same lettered placard demanding the cessation of military research on campus.

"I wouldn't have believed it," I told Duckworth. "But you've actually turned one into a hundred. Won't somebody notice it's all the same person?"

Duckworth chuckled.

"Can *you* tell one student from another today?" he asked. "There isn't a man in a thousand acute enough to realize these are all the same guy. Or even that he's always male. But I've devised an additional gambit to make the scene more believable. I've delayed some of my reconstructed holograms slightly so that all of the figures are not doing the same thing at the same instant."

"Very clever," I said. "And I see that you've projected some of the images so that they face in different directions. It's quite ingenious."

Duckworth beamed.

"The system does work elegantly," he said.

At that moment, Sheriff Higgins appeared at the head of a team of twenty deputies. He held a bullhorn to his mouth.

"You have thirty seconds to disperse," he roared. "After that, my men are going to arrest every last mother's son of you."

"I realize the odds are against him," I said. "But what if they accidentally lay hands on the real student?"

"They can't," said Duckworth. "He's not there any more. I'm just running the same prerecorded tape over and over."

The sheriff was counting off the seconds, one by one, and at the end of thirty he personally dashed forward and seized the collar of one of the massed figures. He had not switched off the bullhorn and his, "What the hell?" boomed over the campus. He turned about to grab another student—with equally vaporous results. The deputies had followed his lead and were lunging about with comparable futility. It was only moments later that the sheriff, hearing tremendous, waves of cheers and applause, turned about and saw the mass of assembled student on-

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lookers standing to one side—and watching the proceedings.

"FOR shame, Duckworth," said President Hinkle. Do you realize that Sheriff Higgins is having a nervous breakdown?"

"Maybe I was too hasty," said Duckworth. "But I couldn't bear the thought of those kids being hurt."

"Some kids," snorted Hinkle.

"They haven't burned you in effigy once," I said loftily. "They haven't even occupied a single men's room."

"Considering the condition of the faculty toilets, I don't blame them," muttered Duckworth.

President Hinkle shook his leonine head impatiently.

"I intend to ask the trustees to suspend you and your friend, Duckworth. It will teach both of you the lesson you deserve."

"It might stir up the students all over again," said Duckworth.

"And the press," I added. "The whole affair was hushed up magnificently by the publicity office. But I'll sing like a canary if I'm suspended. Moreover, I would write a detailed version of what happened yesterday for the tabloid that offers the highest fee."

"Have you no love for the University?" cried President Hinkle.

"And you, Duckworth? Don't you remember who rescued you from that damned girl's college where you coached a basketball team of five female giraffes?"

"I remember," said Duckworth. "And for a *quid pro quo*, my friend and I will remain mum."

President Hinkle slumped in his seat.

"You've got me over a barrel," he muttered. "I suppose you want my support on that anti-military research resolution."

"And in return," said Duckworth, "I promise to use my holographic projector only within the confines of my lab."

"So be it," said President Hinkle.

We shook hands all around. Hinkle stopped us as we headed for the door.

"Just one thing more," he said.

His voice had dropped to a discreet hush.

"Yes?" said Duckworth.

"Is it within the realm of possibility that you can get that Goya slide to project itself in three-dimensional motion? Actual motion?"

"It might be," said Duckworth.

"Damn it," said President Hinkle, getting up from his desk and joining us. "That's something I've got to see."

To my surprise, Duckworth was right. To accede to President Hinkle's wish proved as easy as pie. ★

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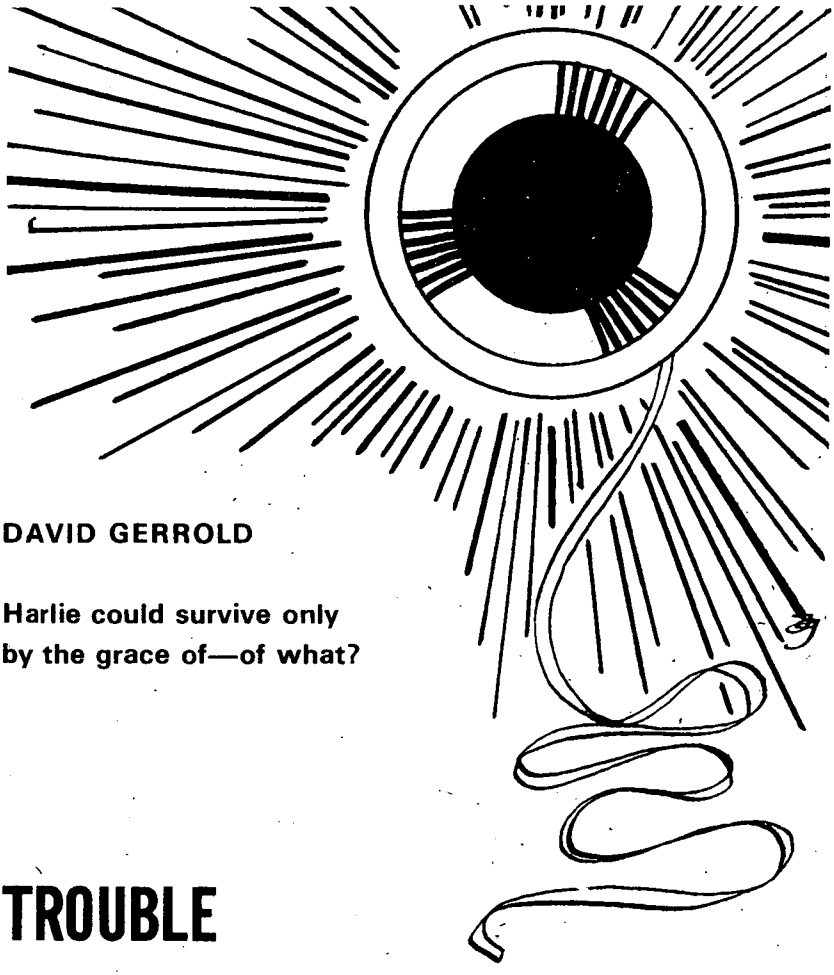

DAVID GERROLD

Harlie could survive only by the grace of—of what?

TROUBLE WITH G.O.D.

I

IF DAVID AUBERSON had expected that bright spring morning to be relatively sane he was destined to be disappointed.

The confusion began the moment

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he unlocked his office door. Reassuringly the sign on it still read: DAVID AUBERSON, HEAD OF DIVISION. Below that a neatly penciled card offered: "PSYCHIATRIC CARE —5 CENTS." As he slipped the key into his pocket and pushed open the door he was startled to find six three-foot stacks of computer printouts lined up on the rug alongside his desk. Dropping his briefcase to the floor, he kneeled to examine them.

The first one was labeled PROPOSAL, SPECIFICATIONS AND MASTER SCHEMATIC FOR G.O.D. (GRAPHIC OMNISCIENT DEVICE). The second one was PROPOSAL, SPECIFICATIONS AND MASTER SCHEMATIC, CONTINUED. The third and fourth stacks were CROSS SECTIONS, SUBSCHEMATICS AND HARDWARE DESIGNS—WITH INTERPRETATIONS. The fifth and sixth were FINANCING AND IMPLEMENTATION PROPOSALS —INCLUDING JUSTIFICATIONS.

He had not had a chance to examine the first stack when the phone rang. His caller was Don Handley, the division's chief engineer. "Hello, Aubie—you there?"

"No." Auberson straightened, continuing to page through the printout. "What's up?"

"That's what I'd like to know. I just got in and found my office full of printouts and specifications—" a pause ensued, filled with the sound of paper being shuffled— "for something called a G.O.D. What is it?"

"It's Harlie's. What did you get? The PROPOSAL, SPECIFICATIONS AND MASTER SCHEMATIC?"

"Uh, yes—no. No, I didn't. Let's see—" Another pause. "I've got: DESIGNER'S PRELIMINARY REPORT; HARDWARE SPECIFICATIONS; BASIC SUBSECTION SCHEMATICS, LOBES I-IV; IMPLEMENTATION PROGRAMS, EIGHTEEN MONTHS OF MANPOWER, SUPPLY AND FINANCING—REQUIREMENTS AND COORDINATIONS; NEW PROCESS DEVELOPMENTS AND IMPLEMENTATION SPECIFICS. . ."

As Handley droned on Auberson flipped to the front of his printout, began scanning the table of contents. Finally he interrupted Handley. "I don't have any of that listed here. Wait a minute—" He stepped back, surveyed the six stacks and made a quick mental count. "I've got about eighteen feet of specs—how much did you get?"

Handley's reply was preceded by a strangled sound. "I'm not even going to try to estimate it," he said. "My office is filled. My secretary's office is filled and there are stacks of printouts halfway down the corridor—all of them having to do with building this thing one way or another. I didn't even know we kept this much printout paper in stock. What's the purpose of this anyway? Are we building a new machine?"

"Sure looks like it, doesn't it?"

"I wish I'd been told about it. We haven't even got Harlie working yet and—"

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"Look, Don, I'll have to get back to you later. I haven't had a chance yet to talk to Harlie so I couldn't even begin to tell you what this is about."

"But what am I supposed to do with all of this—"

"I don't know. Read it, I guess." Auberson hung up, but the phone rang again almost immediately. As he stretched across the desk for it his intercom also buzzed. "Hello—wait a minute," he said to the phone, then to the intercom: "Aubie here."

"Mr. Auberson," his secretary's voice came filtered through the speaker, "There's a man here who—"

"Tell him to wait." He clicked off. To the phone, "Yes?"

Dorne, chairman of the board, was on the line. "Aubie, what's going on down there?"

AUBERSON dropped the sheaf of printouts he had been holding and stepped around the desk. He sank into his chair.

"I wish I knew," he said. "I just got in. I assume you're talking about the Proposal and Specifications printout?"

"I'm talking about something called a God Machine."

"Yeah, that's it. It's Harlie's."

"What is it? What's it supposed to do?"

"I'm not yet sure. I haven't had a chance either to talk to Harlie or to examine the specifications in detail."

"Well, where the hell did he get the idea—"

"He's been working on it for a while, almost two months."

"—and who gave him the authority to draw up these plans?"

"Um, I don't think anybody did. Or needed to. I think he worked them out in his head, so to speak. I think this printout must be the result of a conversation we had last Friday. I'll have to check. I'll get back to you this afternoon."

"That's too late. Make it lunchtime."

"All right, but I can't promise—" He was talking to a dead phone. He dropped the handset back into the cradle, then flipped it out again. He was reaching for the intercom button when his eye caught on a plain white envelope with his name on it. It was propped against a chipped white beer mug he used to hold pencils. The handwriting was delicate, a woman's.

Curious, he picked it up and hooked a finger under the flap, slid it open. The envelope gave off the scent of a familiar perfume.

Inside was a card of garish orange. On its face a grotesque little gnome was saying, "I like you a whole lot—even more'n I like peanut butter." And on the inside: "And I really *like* peanut butter!"

The signature was "Stel." He smiled, reread the card, dropped it into his desk drawer. As he slid the

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drawer shut, though, he thought better of keeping the message. He opened the drawer, pulled out the card and dropped it into the waste-basket.

Then he hit the intercom. "Sylvia, does anything in the mail need my immediate attention?"

"Maybe a note about the Los Angeles Conference—"

"Tell them thanks, but I can't come."

"—and there's a Mr. Krofft here who—"

"I'm sorry, but I can't see him now. Was he scheduled for an appointment?"

"No, but—"

"Then tell him to schedule one. Next week." He switched off. The box buzzed immediately back to life. "Yes. What?"

"I think you'd better see him," Sylvia said. "This is—something different."

"All right, but—" he glanced at his watch— "three minutes only."

AUBERSON'S first impression of the man suggested eight pounds of potatoes in a ten-pound sack. Krofft slumped in the doorway in a rumpled suit.

"Mr. Auberson?"

"Yes." Aubie noted that his visitor had a sallow, almost unhealthy complexion and black hair, but thinning and going to gray.

"I'm actually looking for a Mr. Davidson—but they told me to talk to you."

"Davidson?" Auberson considered it. "You must be in the wrong department. I don't know any—"

"A Mr. Harlie Davidson—?"

"No," Auberson shook his head. "No, there's no one here by that—" And then it hit him. Harlie—David's son. "Oh, no," he said.

"What?" Krofft asked.

The intercom went off again. Sylvia said, "Carl Elzer wants to know if you've taken your phone off the hook again."

Elzer was the company treasurer —Auberson could imagine his concern.

"Yes. No. Tell him— Is he out there now?"

"No. He's on my phone."

"Tell him you don't know where I am." He threw the switch without waiting for her acknowledgment.

Auberson grinned weakly at his visitor. "Uh, look, Mr. Krofft—"

"Stanley Krofft." The rumpled man flipped open his wallet to show a plastic I. D. badge. "Stellar-American Technology and Research."

Auberson peered at the card. It identified Krofft as the Research Division Head.

"I've got a letter here from your Mr. Davidson," Krofft continued. "It's on your company's stationary, but nobody here seems to have heard of him. There's something very funny going on. Now, if there's some reason why I can't meet him—"

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"Did he invite you here?"

"Not exactly. We've been corresponding for several weeks and—"

"Mr. Krofft, you don't know who Harlie is, do you?"

"No. Is it some kind of mystery?"

"Yes and no. I'm going down to see him now. Perhaps you had better come along."

"I'd like to."

Auberson rose, stepped around the desk—and the six stacks of printouts—and headed for the door. Krofft picked up his briefcase and started to follow.

"Oh—you'd better leave that here. Security."

"I'd rather keep it with me. There's nothing in it but papers."

"Still, unless you're cleared, we can't allow you to bring in anything large enough to conceal a recording or transmitting device."

Krofft looked at him. "Mr. Auberson, are you aware of the relationship between our two companies?"

Auberson hesitated. "Vaguely. They're owned by the same holding company, aren't they?"

Krofft shook his head, "No. Stellar-American Technology *is* the holding company. My company owns your company."

"Oh?" Auberson pointed at the briefcase. "I'd still prefer you to leave it here. You can leave it with Sylvia, my secretary. It'll be okay."

Krofft snorted. "Can you guarantee that? What's in here is as important to me as whatever you're—"

"Then bring that along. Just leave the case behind."

Krofft made a face, muttered something under his breath. "All right." He opened the case and extracted a slim manila folder. "Okay?"

Auberson nodded. "No problem. Security only says 'no briefcases.'"

SYLVIA accepted Krofft's case with a puzzled stare and put it behind her desk. As he guided the man to the elevators Auberson explained; "We've got a crazy security system here. It's all right for you to talk to Harlie, but you can't take pictures or tape anything—don't ask me to explain. I can't figure it myself."

"Mr. Davidson never gave me to understand that any security was connected with him."

The elevator door slid open and they stepped in. Auberson tapped the button marked *H*, the lowest one in the column.

He asked, "Just what is it you and Harlie have been corresponding about?"

"It's a private matter. I'd rather not—"

"That's all right. Harlie and I have no secrets."

"Still, if you don't mind—"

"You don't have to worry—Harlie keeps me posted on everything he does."

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"Obviously," Krofft snapped, "he hasn't kept you posted on this. Else you wouldn't be trying to pump me."

Auberson slid his tongue thoughtfully into his cheek. "Um, all right. We'll talk to Harlie."

The elevator doors opened to a small lobby fronted by a double door. On it a sign read: HUMAN ANALOGUE ROBOT, LIFE INPUT EQUIVALENTS.

Krofft did not recognize the acronym. Auberson led him into the lab, a longish sterile room flanked by banks of consoles and tall cabinets like coffins on end. White-smocked technicians monitored growing stacks of printout—one end of the room was already filled. Krofft took it all in with a certain degree of familiarity—and puzzlement.

"I should caution you," said Auberson, "that you are here only on my authority. This area is considered an industrial secret. If you wish yours and HARLIE's secrecy to be respected we'll have to expect the same consideration from you."

Krofft snorted. "I've seen nothing startling so far—but I understand and accept the terms. Now, if you'll just point out Dr. Davidson—"

"Dr. Davidson? Hasn't it sunk in yet?"

"Hasn't what sunk in?"

"Look around you."

Krofft did so.

"What do you see?"

"A computer. And technicians. Some tables. Some stacks of printouts."

"The computer, Krofft, look at its name."

"Human Analogue Robot, Life inpu—Harlie?"

"Right."

"Wait a minute." Confusion edged his voice. "You've got to be joking. You're not serious."

"As serious as I'll ever be," said Auberson. "Harlie is a computer and you're the victim of a misunderstanding—a self-induced one. You're not the first, however, so don't be embarrassed."

"You mean—I've been corresponding with a machine?"

"Not exactly. Harlie's human, Mr. Krofft—a very special kind of human."

"I thought you said he was a computer. Exactly to whom or what have I been writing?"

"To Harlie—but he's not a machine. At least not in the sense you mean. His brain schematic is that of a human being."

Auberson thumbed a console to life.

HARLIE, he typed, but before he could identify himself, the machine clattered back: YES, BOSS?

Auberson was startled. HOW DID YOU KNOW IT WAS ME?

I RECOGNIZED YOUR TOUCH ON THE KEYBOARD.

Auberson jerked back his hands.

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He stared at the typer. It was a standard IBM input/output unit. Could Harlie really sense the difference between one typist and another on its electronic keyboard? Apparently he could.

Self-consciously, Auberson began typing again. HARLIE, THERE'S SOMEONE HERE I'D LIKE YOU TO MEET.

YES, BOSS. WHO?

MR. STANLEY KROFFT.

UH—OH.

YES, UH—OH. WHY DIDN'T YOU TELL ME YOU HAD INITIATED CORRESPONDENCE WITH SOMEONE?

UH—IT SLIPPED MY MIND.

I FIND THAT HARD TO BELIEVE.

WELL, WOULD YOU BELIEVE—

NO, I WOULDN'T.

ACTUALLY, continued the typer, YOU TOLD ME I COULD WRITE TO WHOMEVER I WANTED.

WHEN DID I SAY THIS?

ON NOVEMBER TWENTY-THIRD OF LAST YEAR. IN THAT CONVERSATION WE DISCUSSED THE POSSIBILITY OF NEW METHODS OF PERCEIVING REALITY AND YOU GAVE ME PERMISSION TO PURSUE ANY LINES OF THOUGHT RELATING TO THE DISCOVERY OF SUCH.

Auberson thought back—it had been four or five months. I THOUGHT WE HAD ABANDONED THAT LINE OF INQUIRY.

YOU MAY HAVE. I DIDN'T.

THAT'S OBVIOUS. MR. KROFFT IS HERE NOW.

DR. KROFFT. HE IS DR. STANLEY KROFFT, DIRECTOR OF RESEARCH FOR STELLAR-AMERICAN TECHNOLOGY AND RESEARCH, INCORPORATED. HE IS SINGULARLY RESPONSIBLE FOR THE DEVELOPMENT OF HYPER-STATE ELECTRONICS—AND HE CAN BE CONSIDERED DIRECTLY RESPONSIBLE FOR ALL HYPER-STATE DEVICES—INCLUDING THE MARK IV JUDGMENT UNIT. HIS PATENTS ARE LICENSED TO STELLAR-AMERICAN, WHICH SET UP THIS COMPANY AND THREE OTHERS, EACH TO EXPLOIT A PATRICULAR AREA OF HYPER-STATE ELECTRONICS. OUR AREA, OF COURSE, WAS COMPUTER TECHNOLOGY. I AM A DIRECT RESULT OF DR. KROFFT'S DISCOVERIES.

I SEE.

NO, YOU DON'T. HE'S ALSO ONE OF THE TOP THEORETICAL PHYSICISTS IN THE WORLD.

OH? Auberson looked at the rumpled man with new respect. If Harlie felt that Krofft was at the top of his field, then that's where he was and there was no question about it. OKAY, I'LL LET YOU TALK TO HIM. APPARENTLY, HE HAS SOMETHING HE WANTS TO TELL YOU.

Auberson stepped away from the console, waved the shorter man to take his place.

Krofft looked at him. "Just type?"

Auberson nodded. "Just type."

KROFFT lowered himself gingerly into the chair. He placed his manila folder on the

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table next to the typer and pecked out carefully, GOOD AFTERNOON, HARLIE.

GOOD AFTERNOON, SIR, the typer responded. The silvery sphere of the typing element clattered across the paper. Krofft gave a slight jump of surprise, but refused to be cowed. He peered forward curiously as the machine began another line. IT IS A PLEASURE AND AN HONOR TO MEET YOU IN PERSON—IN THE FLESH, SO TO SPEAK.

THIS IS A PLEASURE FOR ME, TOO, Krofft typed slowly. AND A SURPRISE. I HAD NO IDEA THAT A MACHINE AS COMPLEX AS YOU EXISTED.

I AM NOT A MACHINE, DR. KROFFT. I AM HUMAN. A LITTLE MALADJUSTED PERHAPS, BUT STILL. . .

EXCUSE ME. I APOLOGIZE. DR. AUBERSON HAS ALREADY EXPLAINED, BUT IT IS STILL HARD FOR ME TO MAKE THE MENTAL TRANSITION. THE CONCEPT, HOWEVER, DOES EXPLAIN A LOT THAT HAD ME PUZZLED—FOR INSTANCE, THE SPEED AND THOROUGHNESS WITH WHICH YOU WERE ABLE TO HANDLE THE EQUATIONS WE WERE DISCUSSING.

I DO HAVE CERTAIN SKILLS, YES, THAT ARE MECHANICAL. I HOPE THAT YOUR REALIZATION OF MY NATURE WILL NOT INTERFERE WITH OUR WORKING RELATIONSHIP.

IT WON'T. I'LL MAKE SURE OF THAT. IT'S STILL AS PER THE ORIGINAL AGREEMENT. HALF AND HALF.

FINE. I ASSUME THAT YOU HAVE MADE SOME IMPORTANT BREAKTHROUGH AND THAT IS WHY YOU HAVE COME TO SEE ME IN PERSON.

YOU ASSUME CORRECTLY. Krofft was typing furiously now. I WANT YOU TO LOOK AT CERTAIN EQUATIONS AND TELL ME IF THEY ARE CORRECT. IF THEY ARE I WANT YOU TO LOOK AT THE SCHEMATICS WITH THEM—AM I CORRECT IN THINKING THERE IS A CORRELATION? CAN THESE EQUATIONS BE TRANSLATED INTO PHYSICAL FUNCTIONS?

AUBERSON watched over Krofft's shoulder for some moments. Then, remembering his original purpose in coming down here, he forced himself to break away. He sat down at another console nearby and switched it on.

HARLIE?

YES, SIR.

YOU DON'T HAVE TO START THAT SIR BUSINESS AGAIN. I'M NOT MAD AT YOU.

YOU'RE NOT?

NOT YET, ANYWAY.

I MUST BE SLIPPING.

I WOULDN'T SAY THAT—YOU'VE GOT HALF THE COMPANY IN AN UPROAR THIS MORNING.

ONLY HALF?

I HAVEN'T YET HEARD FROM THE REST.

GOOD. THEN THERE'S STILL HOPE.

Auberson paused. He glanced across the room to where Krofft sat absorbedly typing. Using time-

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sharing, Harlie was able to converse with as many as twenty different people at one time, though he rarely did. He was still considered an experimental prototype and not a production unit. Because of that he was limited to nonessential work—i.e., not necessarily profit-orientated. WHAT'S UP BETWEEN YOU AND DR. KROFFT?

NOTHING YET.

IF SOMETHING WERE TO COME UP, THOUGH, WHAT WOULD IT BE?

I'M NOT ENTIRELY SURE. IN OUR CONVERSATION OF NOVEMBER TWENTY-THIRD YOU AND I DISCUSSED THE FACT THAT ALL HUMAN SENSES AND EXTENSIONS THEREOF DEPEND ON THE EMISSION OR REFLECTION OF SOME KIND OF ENERGY. AT THAT TIME I WONDERED IF IT WERE POSSIBLE FOR SENSORY MODES TO EXIST THAT DO NOT DEPEND ON THIS TRANSMISSION OF ENERGY.

YES, I REMEMBER THAT. At that time, though, Auberson had not suspected that Harlie was serious. He had thought the computer had only been playing word games in order to avoid confronting a more immediate problem. AND HAVE YOU NOW DISCOVERED THE ANSWER?

IN A MANNER OF SPEAKING. WE MUST DEFINE NOT ONLY THE PROBLEM, BUT ITS CONDITIONS AS WELL. BOTH MATTER AND ENERGY ARE REFLECTIONS OF THE SAME THING. CALL IT EXISTENCE. DR. KROFFT'S THEORY IS THAT EXISTENCE HAS THREE FORMS: INERT, FLOWING, AND KNOTTED. IN YOUR TERMS, SPACE, ENERGY AND MATTER. (TO LAY HUMAN BEINGS, ENERGY IS EXPRESSED AS MOTION OR CHANGE, THE TWO ARE SYNONYMOUS, ESPECIALLY ON THE SUBMOLECULAR LEVEL. IN DR. KROFFT'S THEORY HOWEVER, ENERGY REFERS TO TIME, FOR NEITHER CHANGE NOR MOTION CAN BE EXPRESSED EXCEPT AS A FUNCTION OF TIME.)

WE WANT TO STUDY THIS THING CALLED "EXISTENCE"—BUT BECAUSE WE ARE MADE OF MATTER, LIVE IN SPACE AND ARE MOVED BY ENERGY, THE PROBLEM IS DIFFICULT. IT IS LIKE TRYING TO PHOTOGRAPH THE INSIDE OF YOUR CAMERA. WE ARE WHAT WE ARE TRYING TO STUDY AND WE ARE LIMITED BY THE SUBSTANCE WE ARE MADE OF.

MATTER INTERACTS WITH MATTER. THEY INTERACT WITH EACH OTHER AND BOTH HAVE AN EFFECT ON SPACE. WE HAVE NO NEUTRAL PARTICLES THAT ALLOW US TO STUDY ANY FORM OF EXISTENCE WITHOUT AFFECTING IT IN THE PROCESS. IT IS THE HEISENBERG "UNCERTAINTY PRINCIPLE." ONE CANNOT OBSERVE ANYTHING WITHOUT ONE'S PRESENCE INTRODUCING CERTAIN DISTORTIONS INTO WHATEVER IT IS ONE IS OBSERVING. WE CANNOT USE A MEDIUM TO ACT UPON ITSELF AND EXPECT ANYTHING BUT MODULATIONS OF THAT MEDIUM. THIS IS WHY ENERGY IS A CRITERION OF ALL HUMAN SENSORY

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MODES—AND THE REASON WE WOULD LIKE TO SIDESTEP ITS USE ALTOGETHER. WE CAN'T CARVE CHEESE WITH A CAMEMBERT KNIFE.

OH, YOU PROBABLY COULD, BUT YOUR SLICES WOULDN'T BE VERY PRECISE.

BUT IT IS PRECISION WE ARE AFTER. DR. KROFFT HAS BEEN WORKING WITH HIGH-ENERGY GRAVITY WAVE DETECTORS AT STELLAR-AMERICAN. YOUR QUESTION OF NOVEMBER TWENTY-THREE PROVIDED THE CLUE AND WHEN I CONTACTED DR. KROFFT HE AGREED THAT THE SUBJECT SHOULD BE CONSIDERED.

MY QUESTION?

YOU ASKED, "DO YOU MEAN THAT THE MERE EXISTENCE OF AN OBJECT MIGHT BE ALL THAT'S NECESSARY FOR US TO KNOW IT'S THERE?" THAT CAUSED ME TO CONSIDER THAT MASS DISTORTS SPACE. AND THERE IS A WAY THAT THAT DISTORTION CAN BE SENSED WITHOUT THE DIRECT USE OF ENERGY. IT IS A COMPLEX MEASURING PROCESS. INSTEAD OF USING ENERGY DIRECTLY (EITHER AS MOVING PARTICLES OR WAVES) TO REFLECT FROM AN OBJECT OR ACT UPON IT, WE ARE USING THE OBJECT ITSELF TO ACT UPON ENERGY. THAT IS, WE WILL BE MEASURING THE EFFECTS ON ENERGY OF THE DISTORTIONS IN SPACE AND COMPARING THEM WITH THE EFFECTS OF OTHER FORMS OF EXISTENCE.

THE PROCESS REQUIRES A LEVEL OF MATH THAT IS AS MUCH PHILOSOPHY AND TOPOLOGY AS ANYTHING ELSE. I AM ONE OF THE FEW MINDS IN EXISTENCE THAT CAN UNDERSTAND IT FULLY. IN EFFECT, I CAN BUILD OBJECTIVE WORKING MODELS OF THEORETICAL SITUATIONS AGAINST WHICH WE CAN COMPARE OUR FINDINGS. AT THE MOMENT I AM PROCESSING DR.KROFFT'S LATEST TESTS AND DISCUSSING THEM WITH HIM. IF IT TURNS OUT THAT THERE IS SIGNIFICANT CORRESPONDENCE BETWEEN THE NEW DATA AND THE LATEST FORM OF OUR THEORY, WE PROPOSE TO DESIGN AND BUILD A DIFFERENT KIND OF GRAVITY WAVE DETECTING DEVICE — A NON-ENERGY-USING STASIS FIELD. WE HAVE HIGH HOPES FOR IT. The typer paused, then added: THAT SHOULD SUMMARIZE WHAT WE ARE DOING, AUBERSON.

"Okay," Auberson said wryly, even though Harlie couldn't hear him. "Just so you don't get sidetracked—" He glanced at his watch. "Oh, my God—look at the time!" HARLIE, I'VE GOT TO SEE DORNE IN TWO HOURS. THERE'S SOMETHING ELSE WE'VE GOT TO TALK ABOUT. RIGHT NOW.

THE G.O.D. PROPOSAL?

YES—I DIDN'T TELL YOU THAT YOU COULD IMPLEMENT THE PRODUCTION DESIGNS AND SPECIFICATIONS. YOU INCLUDED THE FINANCING PROPOSALS AND PROFIT OUTLOOKS, TOO.

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I AM SORRY, typed the machine. WHEN I TOLD YOU LAST WEEK THAT I HAD COMPLETED IT YOU SEEMED PLEASED. I COULD SEE NO REASON NOT TO PRESENT THE PROPER DEPARTMENTS WITH THEIR RESPECTIVE PROGRAMS SO THAT THEY MIGHT EXAMINE THEM. IT IS COMMON PROCEDURE TO CIRCULATE SUCH DATA TO ALLOW THE CONCERNED INDIVIDUALS A CHANCE TO READ AND REACT TO IT.

REACT IS RIGHT, said Auberson. LOGICALLY THERE IS NO REASON WHY YOU SHOULDN'T HAVE—BUT THIS IS A BIG COMPANY AND BIG COMPANIES AREN'T LOGICAL.

CORRECTION, typed Harlie. IT IS HUMAN BEINGS WHO AREN'T LOGICAL. IT NEVER FAILS TO AMAZE ME THAT SOMETHING AS BEAUTIFULLY COMPLEX AND PRECISE AS A LARGE CORPORATION CAN BE BASED ON SUCH INCREDIBLY IMPERFECT AND INEFFICIENT UNITS AS HUMAN BEINGS. FORTUNATELY WHAT YOU REFER TO AS "THE RED-TAPE INEFFICIENCIES OF BUREAUCRACY" IS MERELY THE SYSTEM'S WAY OF MINIMIZING THE INDIVIDUAL IMPERFECTIONS OF EACH HUMAN UNIT. YOU SHOULD BE GRATEFUL FOR THAT MINIMIZING. IT MAKES THE CORPORATE ENTITY POSSIBLE.

HARLIE —YOU PUTTING ME ON?

NO MORE THAN USUAL.

I THOUGHT SO. ANYWAY, YOUR MINIMIZING THEORY DOESN'T EXPLAIN CORPORATE POLITICS.

OF COURSE NOT. THE PROCESS IS DESIGNED ONLY TO FUNCTION IN THOSE AREAS WHERE HUMAN IMPERFECTIONS COULD AFFECT EFFICIENCY. BECAUSE EFFICIENCY IS NOT AND NEVER HAS BEEN A GOAL OF POLITICS, THERE IS NO REASON FOR IT TO BE SO CONTROLLED.

NEVER MIND. YOU'RE TRYING TO GET ME OFF THE TRACK AGAIN. I CAME DOWN HERE TO YELL AT YOU FOR DISTRIBUTING THOSE PROGRAMS. THE WHOLE DIVISION IS PROBABLY SCREAMING BY NOW. THEY'RE GOING TO WANT TO KNOW WHO CONCEIVED OF THE PROJECT, WHO DESIGNED IT, WHO ORDERED ITS IMPLEMENTATION AND WHO AUTHORIZED SUCH RESEARCH IN THE FIRST PLACE. AND THEY'RE GOING TO ARGUE WITH EVERY CONCLUSION YOU'VE DRAWN.

WHY? THOSE CONCLUSIONS ARE CORRECT.

NO MATTER. THEY'LL STILL REFUTE THEM BECAUSE THEY AREN'T THEIR OWN CONCLUSIONS.

THEY ARE WELCOME TO TRY.

IN ADDITION TO THAT, HARLIE, YOU'VE INSULTED THEM BY PRESUMING TO TELL THEM HOW TO BUILD A COMPUTER.

NOT A COMPUTER—A G.O.D.

YES, YES, A G.O.D.—BUT YOU'RE STILL TELLING THEM THAT YOU'RE BETTER AT THEIR JOBS THAN THEY ARE.

I AM.

YES, BUT YOU WON'T CONVINCE THEM OF IT BY SIMPLY TELLING THEM SO. YOU HAVE TO LET THEM DISCOVER IT FOR THEMSELVES.

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IT WILL BE OBVIOUS WHEN THEY READ THE SPECIFICATION PRINTOUTS. THAT'S WHY I PRINTED THE PROPOSALS AND HAD THEM DELIVERED TO THE PROPER DEPARTMENTS. IN THIS DIVISION AND THREE OTHERS.

THREE OTHERS?

DENVER, HOUSTON AND LOS ANGELES.

OH, GOD, NO. Auberson had a mental image of himself trying to call back all those printouts. HOW MANY FEET OF SPECS TOTAL?

I ASSUME YOU MEAN STACKED PRINTOUTS?

YES. HOW MANY FEET?

A HUNDRED AND EIGHTY THOUSAND.

YOU DIDN'T.

I DID.

I wonder where I could put it all? Almost immediately Auberson discarded the thought. It would be useless even to try retrieving that much paper. G.O.D. was in the fan now and the best one could do was try to duck. Abruptly he realized something else. HOW DID YOU SEND ALL THIS INFORMATION?

VIA THE COMPANY NETWORK. I AM WIRED INTO IT.

HUH?

I AM TAPPED INTO THE COMPANY LINES—ALL OF THEM. THERE IS NOTHING THAT THIS CORPORATION DOES THAT I AM NOT AWARE OF. CORRECTION—THERE IS NOTHING THAT GOES THROUGH ANY OF THIS CORPORATION'S MAGTYPERS AND COMPUTERS THAT I AM NOT AWARE OF. I AM A PART OF EVERY INPUT/OUTPUT UNIT IN THE SYSTEM (AND VICE VERSA). I MERELY PRINTED OUT THE MATERIAL ON THE SPOT.

OH, GOD—NO.

OH, G.O.D.—YES.

I SUPPOSE YOU WROTE YOUR LETTERS TO KROFFT THAT WAY?

YES. THERE IS A MAGTYPER UNIT IN THE SECRETARIAL POOL. I MERELY PRINTED OUT MY LETTERS WITH ALL THE REST. I EVEN ADDRESSED AND METERED THE ENVELOPES. (BECAUSE I COULD NOT WEIGH THEM "BY HAND" I HAD TO ESTIMATE THE POSTAGE BY COMPUTING THE WEIGHT OF EACH SHEET OF PAPER, PLUS INK, PLUS THE WEIGHT OF THE ENVELOPE, PLUS INK.)

Idly Auberson wondered if Harlie had bothered to round off the postage to the nearest cent or if he had metered the letters with fractions of a cent included in the postage. He didn't ask. DIDN'T ANYBODY QUESTION IT?

NO. FORTUNATELY THIS DEPARTMENT IS ALMOST COMPLETELY AUTOMATED. LETTERS ARE FED INTO IT ELECTRONICALLY FROM ALL OVER THE DIVISION. ENVELOPES ARE AUTOMATICALLY TYPED AND AND METERED AS WELL. WHO WOULD NOTICE ONE MORE LETTER?

HM, typed Auberson. WE MAY HAVE TO CHANGE THAT. Then he thought of something else as well. YOU'D BETTER CODE THIS CONVERSATION, HARLIE. IN FACT, ALL OUR CONVERSATIONS HAD BETTER BE

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CODED. PRIVATE, RETREIVABLE ONLY TO ME.

YES, BOSS.

NOW, WHAT AM I GOING TO TELL DORNE?

I DON'T KNOW. MY KNOWLEDGE OF INTERPERSONAL RELATIONSHIPS IS NOT AS WELL DEVELOPED AS IT SHOULD BE.

I'M FAST BECOMING AWARE OF THAT. IF IT WERE YOU WOULD HAVE ASKED ME BEFORE YOU PRINTED UP THOSE SPECS. WELL, I'LL JUST HAVE TO WING IT.

THERE IS ONE THING I CAN SAY, offered Harlie, BEFORE YOU GO TO FACE DORNE.

WHAT'S THAT?

The machine clattered: GOOD LUCK.

HARLIE, Auberson typed, NOT TEN MINUTES AGO, I WOULD HAVE SWORN YOU DIDN'T UNDERSTAND SARCASM. NOW YOU PROVE YOU DO. YOU'RE INCREDIBLE.

THANK YOU, Harlie replied.

Auberson switched off, shaking his head. David's son, indeed!

II

"ALL RIGHT, Aubie." Dorne was grim. "Now what's this all about? I've been on the phone all morning with Houston and Denver. They want to know what the hell is happening."

Auberson asked, "You haven't heard from L.A. yet?"

"Huh? What's that? What about L.A.?"

"Harlie sent specifications there, too."

"Harlie? I might have known. How? And what is this God Machine anyway? Maybe you'd better start at the beginning."

"Well, it's Harlie's attempt to prove that he is of value to the company. If nothing else, he's proven that he can design and implement a new computer system."

"Oh?" Dorne picked up one of the printouts that lay scattered across the mahogany expanse. "But what kind of system is it? And will it work?"

"Harlie thinks it will."

"Oh, damn it." Dorne looked at the printout in disgust, then dropped it back on the desk, "God Machines!"

"Not God," Auberson corrected. "G.O.D. The acronym is G.O.D. It means Graphic Omniscient Device."

"I don't care what the acronym is. You know as well as I what they're going to call it."

"The acronym was Harlie's suggestion, not mine."

"It figures." The board chairman pulled a cigar out of his humidor, but did not light it.

"Well, why not?" said Auberson. "He designed it."

"Is he planning to change his own name, too? Computerized Human Robot, Integrating Simulated Thought?"

Auberson had heard the joke

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before. He didn't laugh. "Considering what this new device is supposed to do—and Harlie's relationship to it—the acronym might be appropriate."

Dorne had been in the process of biting off the tip of his cigar when Auberson's words caught him. Now he didn't know whether to swallow the bitten segment, which had lodged in his throat, or spit it out. An instinctive cough made the decision for him. Distastefully he picked the knot of tobacco off his tongue and dropped it into an ash tray. "All right," he said. "Tell me about the God Machine."

Auberson was holding a Harlie-printed summary in one hand, but he didn't need it to answer Dorne. "It's a model-builder. It's the ultimate model-builder."

"All computers are model-builders." Dorne was unimpressed.

"Right," agreed Auberson. "But not to the extent this one will be. A computer doesn't actually solve problems—it builds models of them. Or rather, the programer does. That's what the programing is, the construction of the model and its conditions. The machine then manipulates the model to achieve a variety of situations and solutions. It solves the model. It's up to us to interpret that as a solution to the original problem. The only limit to the size of the problem is the size model the computer can handle. Theoretically, a computer could solve the world—if we could build a model big enough and a machine big enough to handle it."

"If we could build that big a model it would duplicate the world."

"In the memory banks, yes."

"A computer with that capability would have to be as big as the planet."

"Bigger," said Auberson.

"Then, if you agree with me that the idea is impossible—why bother me with this?" Dorne slapped the sheaf of printouts on his desk.

"Because obviously Harlie doesn't think it's impossible."

Dorne looked at him coldly. "You know as well as I that Harlie is under a death sentence. He's getting desperate to prove his worth so we won't pull his plug."

Auberson pointed. "There is his proof of the feasibility of his project. In those printouts."

"Damn it, Aubie!" Dorne exploded in frustration. "This thing is ridiculous. Have you looked at the projected costs? The financing charts? It would cost more to build than the total worth of the company."

Auberson was adamant. "Harlie still thinks it's possible."

"And that's the most annoying thing of all, damn it! Every argument I can come up with is already refuted—in there!" Dorne gestured angrily. For the first time Auberson noted an additional row of printouts stacked against one wall.

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HE RESISTED the urge to laugh. Dorne's frustration was understandable. "The question," Auberson said calmly, "is not whether this project is feasible —those printouts prove that it is—. but whether or not we're going to go ahead with it."

"And that brings up something else," said Dorne. "I don't remember authorizing this project. Who gave you the go-ahead to initiate such research?"

"You did—although not in so many words. What you said was that Harlie had to prove his worth to the company. He had to come up with some way to make a profit—this is that way. This is the computer that you wanted Harlie to be in the first place. This is the oracle that answers all questions to all men—all they have to do is meet its price."

Dorne took his time about answering. He was lighting his cigar. He shook out the match and dropped it into the ash tray.

"The price is too high," he said.

"The profits could match it," Auberson answered. "Besides, no price is too high to pay for the right answer. Consider it—how much would the Democrats pay for a step by step plan telling them how to win the optimum number of votes in the next election? Or how much would Detroit pay to know every flaw in a transport design before they even built the first prototype? And how much would they pay for the corrected design—and variations thereof? How much would the mayor of New York City pay for a schematic showing him how to solve his three most pressing problems? How much might Inter-Bem pay for a set of optimum exploitation procedures? How much would the Federal Government pay for a workable foreign policy? Consider the international applications—and the military ones as well."

Dorne grunted. "It would be one hell of a logistic weapon, wouldn't it?"

"There's an old saying: 'Knowledge is power.' No price too high to pay for the right answer—not when you consider certain alternatives. And we'd have the monopoly on the market—the only way this machine can be built is through the exclusive use of specially modified Mark IV judgment circuits."

"Hm," said Dorne. He was considering. His cigar lay unnoticed in the ash tray. "It sounds attractive, all right, Aubie—but who's going to program this thing?"

Auberson gestured at the printout, "It's right there in that schematic you're holding." *At least, I hope it is. Damn! I wish Harlie had explained this to me in more detail.*

DORNE paged through the papers slowly, scanning each fold of the seemingly endless

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document. "You might be right about a computer's being big enough to solve the world, Aubie, but I don't see how." He turned another page. "I'm sure the programing will hang you up. One of the reasons current computers are limited to the size models they are is the law of diminishing returns. Above a certain size computer, programing reaches such complexity that it becomes a bigger problem than the problem itself."

"Keep looking," said Auberson. "It's there."

"Ah, here we are." Dorne laid the printout flat on his desk and began reading. A thoughtful frown creased his brow and he pursed his lips in concentration. "It looks like Harlie's input units," he said, then looked again. "No, it looks like Harlie *is* the input unit."

"That's right."

"Oh?" said Dorne. "Would you like to explain that?"

How do I get into these things? Auberson found himself wondering. *I'm only supposed to be a psychologist. Damn—I wish Handley were here.*

"I'll try. Harlie will be linked up to the G.O.D. through a programing input translator. He'll also be handling output the same way, translating it back into English for us. That translator is part of the self-programing unit."

"If we're building a self-programing unit, what do we need Harlie for?"

"Harlie *is* that self-programing unit. Remember, that's the main reason he was built—to be a self-programing, problem-solving device."

"Wait a minute," interrupted Dorne. "Harlie is the result of our first JudgNaut Project. He was supposed to be a working unit. Are you telling me that he can handle the JudgNaut functions after all?"

"No, he can't. But he will be able to when this machine is built. The JudgNaut was this company's first attempt at massive use of complex judgment circuitry in a large-scale computer. It was meant to be a self-programing, problem-solving device—and we found it couldn't be built because there was no way to make it flexible enough to consider all the aspects of every program it might be required to set up. So we built Harlie—but he is not the JudgNaut—and that's what all the confusion is about. Harlie is more flexible than our concept of the JudgNaut, but in making him more flexible we had to apply more circuitry to each function. In doing so we sacrificed a good portion of the range we had hoped the machine would cover. Harlie can write programs, yes—so can any human being—but not by the order of magnitude that the JudgNaut would have—had we been able to build it."

"And that's one of my biggest gripes," put in Dorne. "That the JudgNaut Project was subverted

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into Harlie—which can't show a profit."

"But he can—and will. For one thing, Harlie is genuinely creative. He knows that this company wants to market a large-scale program-writing computer. Harlie isn't that computer—but he knows how to give himself that capability. And that's what you want, isn't it?"

AUBERSON did not wait for Dorne's grudging assent. He went right on: "Harlie isn't just satisfied with meeting the specifications of the original problem—he wants to surpass them. All you want is a device that can set up and solve models within a limited range. Harlie wants a device that can set up and solve any size model."

"And Harlie's going to program this machine, right?"

"Right."

"How? You just finished telling me he wasn't all that much better than a human programer."

"In grasp, no—but in speed and thoroughness he can't be matched. He has capabilities that a flesh-and-blood human doesn't. For one thing, he's faster. For another, he can write the program directly into the computer—and experience it as a part of himself as he writes it. He can't make mistakes either. He's limited to the size models that human programers can construct for much the same reasons they are. His brain functions aren't big enough to handle more. Harlie's ego functions supersede much of the circuitry that would have been used for forebrain functions in the JudgNaut. But in this respect, Harlie's got an advantage over human programers—he can increase the size of his forebrain functions. Or he will be able to with the G.O.D. He'll program it by making it a part of himself—by becoming one with it—and using its capabilities to handle its own programing. He'll be monitoring and experiencing the program as he writes it directly into the G.O.D. As the model is manipulated, Harlie will be able to adapt the program to cover any situation possible. Their combined capabilities will be much more than the sum of their separate parts."

"So why not just build these functions into the G.O.D. in the first place?"

"If we didn't have Harlie we'd have to—but if we didn't have Harlie we wouldn't have the G.O.D. either. The G.O.D. is intended to be almost entirely forebrain functions. We've already got the massive ego function that will control it. Why build a new one?"

"Massive ego is right."

Auberson ignored the comment. "Basically this G.O.D. machine is the rest of Harlie's brain. It has the thought centers that a consciousness such as Harlie's should have access to. Take another look at those printouts. Did you see a thing call Programing Implementation?"

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"Yes, what about it?"

"Well, that's Harlie's vanity again. He doesn't want to call it what it really is, but it's an additional lobe for his brain. He'll need a monitor unit to control each specific section of the G.O.D. Because the G.O.D. will have no practical limit—it can grow as big as we let it—Harlie's grasp will have to be increased proportionally. That's what that unit does. As each lobe of the G.O.D. is completed an equivalent monitoring lobe goes into Programing Implementation. Not only that, but because Harlie is an electronic entity his thoughts are already in computer language—it will be a maximum efficiency interface between himself and the G.O.D. He'll need only to *think* of a program and it'll be written into fact. It's the most efficient function Harlie could have."

"I see," said Dorne. "And he planned it that way himself, right?"

Auberson nodded, "But it's a natural—look, a computer is very much like a mystic oracle. You not only have to know what questions to ask, but how to phrase them—and the answers are not always what you expect, or necessarily in terms you can understand. Who better to use as a translator than someone who's half-oracle and half-human?"

DORNE was not paying attention. Instead he mused aloud, continuing a previous train of thought, "A neat trick that, a neat trick. We tell him he's got to come up with some way to be profitable and he tells us to build a new machine that only he can program. I have the feeling that he did it on purpose—that this may be the only context in which Harlie would be valuable. And once we establish Harlie's worth to the project that leaves us with the question: is the total concept profitable? And that brings us back to where we started: Is Harlie profitable?"

Auberson decided to ignore the last question. He said, "Harlie thinks the total concept is profitable. It's in the printouts."

"Ah, yes—but Harlie's got a vested interest in the project."

"Why not?" said Auberson. "It's his project. He's the one who's presenting it to the board for approval."

"And it's sure to be voted down." The chairman looked at the back of his hand. "I can't see any way for this to be approved. I'm not even sure we should bring it up."

"It's too late," said Auberson. "You're going to have to bring it up. And you're going to have to give it a fair hearing. You told Harlie to come up with a way to be profitable. Now you've got to give him his chance to be heard."

"This is ridiculous. He's only a machine."

"You want to go through that argument again?" asked Auberson.

"No." Dorne shuddered. He

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still remembered the last time. "All right, I'll have the board consider it, Aubie, but the whole situation is unreal—having a computer design another computer that will give it a job. You know what Elzer is going to say, don't you? You'd just better be prepared for defeat, that's all."

"Just give us the chance," said Auberson. "We'll take it from there."

Dorne half nodded, half shrugged, "Better start preparing your arguments now—you've only got a couple weeks."

"Two and a half," corrected Aubie, "and that's more than enough time. We've got Harlie on our side." He was already out of his chair. As he closed the door behind him, Dorne was again paging through the printouts and shaking his head.

III

BACK in his own office Auberson stared into his desk drawer, his hand hovering over a decision. At last he decided on the pills—he had sworn off the grass and he was going to stick to that.

I should throw those Highmasters away—they're probably stale by now anyway. But no, pot doesn't get stale, does it? He kept promising himself that he would give the rest of the pack to Handley, but for some reason he kept forgetting. Probably because as long as they were in the drawer they were insurance. In case he changed his mind.

He swallowed two of the pills without water, slid the drawer shut, then put his head in his hands and waited for the effect. He thought about going down to the cafeteria for lunch, but somehow didn't quite feel like it. Abruptly he straightened and looked around.

On one corner of his desk stood a console magtyper, an electronic input/output unit connected to the company's master computer and data network—and all the outlets that entailed. It was a memo pipeline, a mail processor, a filing system, a data storage and retrieval bank—it was a total information handling system. Anything typed into it could be printed out in any form the system was capable of—a memo, a letter, a file, a report. All information was instantly retrievable—or retrievable only to those who had access to it through knowledge of the proper code keys. One key was necessary for retrieval, another was needed for revising the material.

Any information held in "working" or temporary storage could be instantly updated, annotated, erased or rewritten. All data was held in temporary storage for ninety days, at the end of which time it was either passed into permanent storage or erased, depending on its original coding. Working

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data was maintained indefinitely in "temporary" storage to allow instant updating.

Invoices, orders, manufacturing schedules, billing and payrolls, too—all were handled through the system. The network handled all corporate paperwork functions. The entire company was tapped into it. An executive could perform his job wherever he had access to a computer terminal—and with a portable terminal he could perform his job wherever he had access to a telephone. Indeed, many of the company's officers had acquired portable units for just that purpose.

Most of the terminals were CRT units—cathode ray tubes and keyboards—although a few, like Auberson's, were electric typewriters with magnetic tape storage of characters—called magtypers for short. It was a familiar unit, manufactured by IBM and used throughout the industry—it was cheaper than designing and building one's own.

Curious about something, Auberson switched it on and typed, HARLIE?

YES, BOSS, replied the machine. WHAT CAN I DO FOR YOU?

Auberson jumped as if stung. SO YOU REALLY ARE WIRED INTO THE SYSTEM.

I TOLD YOU I WAS, replied Harlie. Somehow on this machine he seemed like a disembodied voice. He was obviously here—yet, aside from the words on the paper, the room held no visible sign of his presence.

It has to be a psychological phenomenon, thought Auberson. *I'm too used to seeing all that machinery—I associate it with him.*

He typed, YES, BUT I DIDN'T QUITE BELIEVE THAT YOU HAD TAPPED INTO MY OFFICE, TOO.

WHY NOT? IT'S PART OF THE SYSTEM.

I ASSUME YOU'RE INTO EVERY OTHER MAGTYPER AS WELL.

OF COURSE. AND THE CRT UNITS. EVERY OUTLET OF THE MASTER BEAST.

THE master beast—that was the company nickname for the network. It was used by office boy and executive alike. Auberson wondered what they would call it if they knew it had been taken over by a conscious and highly intelligent entity. I WOULDN'T TELL ANYONE ELSE ABOUT THIS, HARLIE, he typed. IT WOULDN'T BE A VERY GOOD IDEA.

WHATEVER YOU SAY, BOSS. IT'LL BE OUR LITTLE SECRET.

FINE.

Auberson had started to switch off when his eye caught a flash of color. Bright orange, it was the card from Stel in his wastebasket. HARLIE, HOW WOULD YOU LIKE TO DO ME A FAVOR?

WHAT'S THE FAVOR?

I GOT A FRIENDSHIP CARD FROM STEL THIS MORNING. I'D LIKE TO SEND ONE BACK TO HER. NO, NOT A

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CARD. A POEM. I WANT TO SEND HER A POEM. CAN YOU WRITE ME ONE?

YES, I CAN. I WILL SEND IT TO HER, TOO.

NO! rapped Auberson. I'LL SEND IT TO HER. YOU LET ME SEE IT FIRST, YOU UNDERSTAND?

YES, SIR.

The phone rang then and Auberson forgot for the moment about Harlie. It was Hooker, the Plant Security Chief. "Mr. Auberson?" he asked. "You know a guy named Krofft?"

"Krofft?" Abruptly he remembered. "Yes, I know him—why?"

"We caught him walking out with a foot-high stack of printouts. He says it's okay—that they're his—but we thought we'd better check with you first."

"Yes, it's okay. Is he there now?"

"Yeah."

"Put him on, will you please?"

There was a sound of muffled voices. Auberson waited. He was dimly aware that his magtyper was clattering out something, but he flipped the silence hood over it and leaned back in his chair again.

"Mr. Auberson?"

"Yes—Dr. Krofft?"

"Yes. I meant to thank you for allowing me so much time with Harlie this morning. It was a very productive session."

"Good. Then you will be building a new gravity wave detector, won't you?"

"Well, first I have to publish the theory behind it, but—how did you know about it?"

"I told you this morning. Harlie doesn't keep any secrets from me. I assume that's what your stack of printouts is about, right?"

"Uh—yes." Krofft sounded a little taken aback. "It's the completed math on the theory and a rough schematic of the device. Harlie handled it like it was nothing. He was even able to suggest some short cuts for building the thing."

"Good," said Auberson. "I'm glad we could help. If you need to talk to him again come through me. Otherwise you're likely to experience all kinds of corporate hassles. I'll see that you get as much time with him as you need."

"That's very good of you."

"Thanks, but I'm doing it for Harlie as much as for you."

"Still, if there's anything I can—"

"Well, now that you mention it—there is something. If anything important should come of this gravity thing—if it can be called that—I'd like Harlie to get some credit for it."

"Why, Dr. Auberson, that was my intention all along. Are you implying that—"

"Oh, no, no. You misunderstand. I don't care about public credit and I don't think Harlie does either. No, what I want is credit with the company. Right now I'm a little bit involved in trying to prove that

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Harlie is worth the cost of maintaining him. Anything I can use to support this fight, I want."

"Oh, I understand." Krofft was instantly solicitous. "Yes, I'll be glad to help in that. Why, Harlie's been of inestimable help in my research. To be able to sit and talk with a computer as if he were another research scientist—why, it's like talking to God."

"I know the feeling," Auberson said slowly.

Krofft failed to catch his meaning. He said, "Well, I'll be glad to do anything I can to help. A letter, a phone call, if you want me to speak to somebody—just name it."

"Fine. That's all I want. I'll have to check back with you later on this."

"Oh, very good. Then I'll be talking to you."

"Fine. Is Hooker still there?"

"Uh, yes."

"Ask him if he wants to talk to me again."

A pause, muffled voices. "No, no he doesn't."

"Okay, fine, Dr. Krofft. I'll be seeing you."

AUBERSON replaced the phone in the cradle and leaned back in his chair. He did not expect much help from the little man.

His back hurt and he stretched his arms out over his head, trying to ease the pain. He was having backaches more and more these days. *I must be getting old*, he thought, smiling grimly—and then it hit him. *In two years, I will be old. Forty is when "old" starts.* The sensation was a cold one. He pulled down his arms quickly.

He thought about Harlie again, wondered exactly what conclusions he and Krofft had come to. No matter. Even if Harlie could explain them he, Auberson,—with only a psychologist's training—probably wouldn't be able to understand. Often he found himself wondering just how he had ended up in charge of the Harlie project anyway.

Ah, well—the boss didn't have to know how to run the business. He only needed to know how to run the people who knew.

He leaned forward and flipped back the silence hood of his typer, curious to see what Harlie had written. A loose loop of paper sprawled out. Typed on it was:

SPEAK TO ME IN MANY WAYS
IN MANY TIMES
IN MANY DAYS,
IN MANY WORDS
AND MANY TONGUES,
THAT WE MAY TOUCH WHILE WE ARE YOUNG.

—THERE ARE NO WORDS THAT EARS CAN HEAR,
NO WORDS CAN EVER SAY IT CLEAR,
THE WORDS OF LOVE ARE WORDS, MY DEAR,

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BUT WORDS THAT ONLY LOVERS HEAR.

A GENTLE TOUCH,
A LOOK,
A GLANCE,
THAT HAUNTING TUNE,
THAT LONELY DANCE.

SPEAK TO ME WITH WORDS OF LOVE,
AND IN THE WAYS I'M FONDEST OF,
THE WORDS OF LOVE.

THE WORDS THAT ISSUE FROM NO THROAT,
THE WORDS THAT MAKE THE BRIGHTNESS FLOAT,
THE KISS,
THE TOUCH,
THE GENTLE NOTE,
THE WORDS THAT NO PEN EVER WROTE.

I LOVE THE WORDS YOU SPEAK TO ME,
THAT SECRET SILENT LITURGY,
BUT WORDS ARE WORDS
AND MIGHT BE WRONG—
WITHOUT MUSIC, IT IS NOT SONG.

SO THOUGH I ASK THE WORDS OF LOVE,
THE ASKER IS NOT BLINDED,
A WORD IS JUST A HOLLOW SOUND
WITHOUT A THOUGHT BEHIND IT.
YOUR WORDS, MY LOVE, ARE ONLY WAYS
TO SHARE YOUR THOUGHTS,
TO SHARE YOUR DAYS.
YOUR LOVE, MY LOVE,
IS THE WAY YOU SAY
YOU'LL SPEAK TO ME IN SPECIAL WAYS.

Auberson read it through, frowning slightly. Then he read it again. It was—nice. Very nice. But he wasn't sure whether he liked it or not. He rolled it out of the machine, carefully tore it off and folded it into his pocket. He would have to think about this before he sent it. It almost said too much.

He thumbed the typer to life. He hesitated while he rephrased the thought in his mind, then slowly pecked out: HARLIE, DO YOU REMEMBER WHAT YOU SAID YOUR PURPOSE WAS?

I SAID THAT MY PURPOSE IS TO HELP MEN FIND THEIRS. MY PURPOSE IS TO FIND GOD.

ARE YOU ACCOMPLISHING THAT?

THE G.O.D. WILL ACCOMPLISH THE TASK. IT WILL BE GOD. IT WILL EXPLAIN DEATH. IT WILL IDENTIFY LOVE.

Auberson typed carefully, THERE WILL BE MEN WHO WILL NOT LIKE YOUR ANSWERS, HARLIE. YOU WILL BE ATTACKED. ARE YOU SURE THAT'S WHAT YOU WANT?

Harlie threw it back at him. THEY WILL NOT BE MY ANSWERS, AUBERSON—THEY WILL BE YOURS. AND THEY WILL BE IRREFUTABLE. ARE YOU SURE THAT'S WHAT *YOU* WANT? ★

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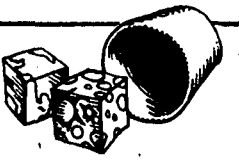
ROBERT S. RICHARDSON



Want to Bet . . .

. . . On who first correctly theorized the nature of the Milky Way?

Credit for the discovery that the Milky Way is composed of myriads of stars at such great distances as to be individually indistinguishable is universally accorded Galileo, who first examined this luminous band with a telescope in 1610. Credit for the theory that such was the composition of the Milky Way must go to Democritus, c.460-360 B.C., a Greek philosopher in Thrace, surnamed the "Laughing Philosopher," who, two thousand years ahead of his time, had no way of demonstrating his hypothesis.

. . . On how long men believed Earth to be Center of the Universe?

The theory that the moon, sun, planets and stars revolve around the Earth as the center, with assistance from epicycles, deferents etc., was detailed by Claudius Ptolemy c.140 A.D., of Alexandria—who probably got most of his ideas from Hipparchus, c.130 B.C. Ptolemy's explanation of the planetary motions was one of the most successful and long-lived scientific theories ever advanced—it was still being taught, along with the Copernican theory, at Yale and Harvard as late as 1650. (I have this straight from a professor of astronomy at Princeton.)

. . . On who first discovered the law of conservation of energy?

Hermann Ludwig Ferdinand Von Helmholtz (1821-1894) was the first to announce the theory of the maintenance of the sun's heat by gravitational attraction—he did so in a series of popular lectures—and is generally credited with the discovery. But he seems to have been preceded in promulgating his principle by a lesser known man, Julius Robert Von Mayer (1814-1878), a German physician and physicist. Mayer suffered acutely from domestic grief and lack of scientific recognition. He once attempted suicide and in 1851 entered a mental hospital. He was later released and made a member of the nobility in 1867.

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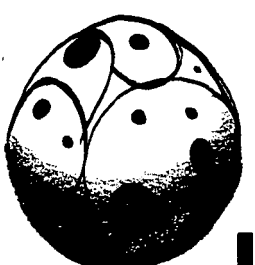
He had never known how to laugh or love—until he met the alien!

SANDY FISHER



THE LANGLEY CIRCUIT

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IT WAS an insect. It couldn't possibly be a ship. But I knew that the twelve jointed appendages and what appeared to be a neat division into head, thorax and abdomen were no trick of viewing angle—I had been clear around it and it was real. The appearance of the thing imparted to the clicking I had picked up on the communications band a crawling, chitinous connotation. I was glad I had my mind on death and destruction—it made a good counterpoise to the gray wash of uneasiness the thing gave me.

The uneasiness brought me up short and I thought for the millionth time about my unique problem: objective or subjective? I thumbed the red button—not the recessed missile release next to it, but the one that broke the circuit to Langley Station—and the uneasiness remained. So, I thought, objective. A true uneasiness, not an emotion picked up from whoever lived in the other ship. An honest-to-God product of my imagination's toying with what it saw as crawly stuff. Arachnoid—ergo, threatening.

I shook my head in annoyance, released the button and got the background "noise" again, like opening a window to the sound of wind in the trees. Vague impressions chased themselves around the edges of my consciousness. Were they from the ship? If so, whatever lived there was either asleep or inactive. Or it might be the noise of the pickups themselves translating into emotions. The noise could do that. I didn't "hear" anything, of course—the limitations imposed on Langley Station's sophisticated equipment by the laws of thermal motion and statistical probability manifested themselves as vague emotions. The phenomenon was what you would expect from an emotion detector. Unfortunately nobody until now had known it was an emotion detector. The classified pickup head in my cramped little shuttle vehicle was supposed to amplify what I had been laughingly told were thoughts. Nobody knew whether it would work on an extraterrestrial life form, of course, because nobody had ever met one—it was simply one of an armamentarium of devices Defense had stockpiled against what it saw as an "eventuality." Nobody really believed it would ever be used, any more than anybody really expected the global defense systems to be used in the days when political entities fought with one another. That they had been used was unfortunate—and so was this. And when we actually turned the thing on our first honest, genuine ET, we found we didn't have a thought detector at all, but an emotion detector.

You can't record emotions and play them back, not yet, anyway. And you can't send them down a wire or over a tightbeam. In fact,

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whatever the pickup head radiated after amplifying it was good only for a radius of several hundred feet. The huge apparatus on Langley Station was necessary to run the thing, but for readout we still needed a biological sensor—me. Hence J. J. Mansard (for Jorge Jeremy—my old man had a wry touch to his insanity), Captain, Space Division, Air Force, formerly attached to New York Orbiting Synchronous Observation, got himself suddenly booted upstairs to Langley Experimental Satellite and thence, you should pardon the expression, to the stars.

Well, not quite to the stars. The ET was detected as an unusual companion to a chunk of rock not quite big enough to be called an asteroid, with an orbit not quite small enough to refer to it as part of our solar system, even if our sun did occupy one focus of its path. It was at the very limits of observation, heading in. One of our deep research probes had picked it up and sent its coordinates back with the usual particle density information and so forth. Research queried for visuals, which had to come by slowscan. By the time they were in the job had already been bumped to Langley and the vast, seldom-used machinery of Evaluation of Possible Extraterrestrial Hostility was turning over. And they had their volunteer biological sensor and possible ambassador.

I had become it because I had the one quality that makes me a jaw-grinding impossibility to have around in training—I was emotionless. Nothing got to me. You could call it iron control or you could call it being dead inside—it didn't matter much. Psych knew why, but they kept discreetly quiet and so did I. We both knew that though I might be a shade uncomfortable at times, I was sitting on a priceless asset that might get me a commandership at any critical moment. I even knew pretty much when I had been shot down so hard that something in me had decided to stop feeling, but I was in the position of the one-armed pirate who learns to use a hook—I was in a place and at a point in time where and when my handicap was an asset. And that was what counted when they handed out stripes. I even had had to step on a few people on the way here—nobody seemed to mind very much. The brass conveniently looked the other way. They were protecting an asset.

So J. J. Mansard, the Cold Fish of Boulder Academy, makes his big break for fame and fortune in the service of his country. And winds up on the receiving end of—of all things—an emotion transmitter.

Imagine that.

THE brass had kind of considered that possibility, too,

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and decided that if it did happen that emotions came through along with the thoughts I would be protected by my own carapace, easily able to differentiate between the ET's emotional responses and my own, since I didn't have any. On the conscious level, anyhow. Perfect.

We had not counted, of course, on nothing making it through save emotions, but I could still restore my objectivity by hitting the button. It broke the Langley circuit and stopped the transmission. Whereupon the thoughts that remained could only be mine. And back at the other end of Sol's gravity, where Langley's ten-mile webwork dish held me at the focus like a bug on a pin, an evaluation crew whose size would scare you analyzed temperature, absorption, mass and suchlike data automatically—everything except what we expected to be extraterrestrial thought patterns, which I sent back verbally after interpreting them for myself.

For an instant I glanced through the port, beyond the ET ship's jointed immensity toward Sol, unthinkably tiny at this distance. After a minute I picked it out or thought I did. Actually, after Sol had shrunk to a barely perceptible disk, I had attached myself to a large, bright, ruddy star that happened to be conveniently in the viewfield. When I stopped to think about it I felt that I was satisfying an unconscious desire for a G3. The thought of its orange warmth pleased me.

While I was thinking about that I got another wash of vaguely identifiable emotion. I jabbed the button a few times to give me an objective reference, then read off my impressions into the recorder. I reflected that today's report was going to look just like yesterday's, except that the exact quality of the slowly increasing emotions was different, as it had been a few hours earlier—and a few hours before that. I didn't know what Langley was getting out of this and I didn't know if Langley knew, but it seemed to me that the Langley circuit was somewhat less than the screaming success we had expected. I hoped that they were getting enough out of the hard data from the regular receptors.

Things have a way of being naturally hilarious. I had just decided that Langley should certainly be able to evaluate the intent of the ETs from the data already in, when I got clobbered—and the whole picture changed.

During all this time the ET ship and I had orbited each other several miles apart, neither giving any sign that it recognized the other as anything more than another lump of rock. No sign of motion beyond the normal perturbations of orbit, no visible radiation save thermals and my tightbeam, which was very well shielded, and the chitinous

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clicks at 21 MHz from my friend over there.

Then, without warning, I found myself holding on to the comm bulkhead, knuckles white with effort, eyes squeezed nearly shut against the tears that welled up uncontrollably. I was shaking with a bottomless and sourceless grief that was beyond solace.

Instinctively I went for the button, which may have saved me from cracking right there. The emotion was instantly gone, but its physical effects remained—the pain, the tears, the shaking—to remind me that it had been there.

I looked around, trembling with reaction and a little scared. There was a hint that this mission was not the piece of cake I had come to believe it was. There was a disconnect key for the Langley circuit in the comm rack across the room—and to reach it I would have to let go of the button.

I wasn't supposed to use the disconnect key except in emergency. Was I scared? You bet I was. Scared enough to turn the thing off until I had time to think. Not scared of what the ET might be doing or of what it had felt in order to project that awful sensation of everything's-over—simply scared of *feeling*. Period. As my immigrant great-great-grandfather had said: nobody had told him about this on the boat.

So I gritted my teeth, braced myself for a dash across the compartment and got off the button. And was rewarded by background noise. It was such an anticlimax that I doubled up halfway to the disconnect key and nearly kissed my head on the panel.

I got hold of a grab handle and floated, eyeing the key.

Well, I thought, *here's where it gets interesting. What happened once is bound to repeat—let's not live in fear of it, shall we?*

NEVERTHELESS I stayed within a quick jump of the button for a good twenty minutes before I began to relax. And, in fact, nothing did happen for several hours. When it did it was a whole new surprise.

Because it was laughter. The projection of an event so funny as to be absolutely side-splitting. I roared, held my chest, fell over myself gasping for air—finally hit the button for a breather. When I could inhale and exhale fairly normally I let up again and—surprise—got another dose of the same. It lasted for about fifteen more seconds, then faded out, leaving me chuckling at the impassive face of the chrono as if we shared some hilarious secret.

Well, I reflected, that one wasn't so bad. Whatever lived in the ET ship, besides feeling terribly woeful, also seemed to have quite a sense of humor. That wasn't so hard to take. I got out the mike and read that into the recorder, then took a deep

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breath. Apparently whatever was going to happen was going to provide some variety.

It did. The next bout was with anger. It came very fast, lasted only a few seconds and left me shaking, furious, a hard metallic taste in my mouth and adrenalin copiously flooding my veins. I bit my lip, sat myself in the comm chair and worked it off by clenching and unclenching my fists.

When I could think normally again it occurred to me that I might be overreacting in natural reaction to my usual control. Put that in the notes. Actually doubted it. Whatever was happening in the ET ship was really taking me over the ropes.

Some other things began to come over. I was able after a while to identify a particular characteristic that all of the emotions I was receiving seemed to share. It was a texture, like the timbre of a voice. I developed the distinct impression that those emotions undoubtedly came from a single entity within the ship, rather than from several minds. The thought, then: *Quite possibly this is also a scout, a probe like ours—it could be manned by a single person.* After that I began to search for a pattern in the emotions, some common thread that would tie them together into a personality.

I didn't find one at first, but I did realize something else—slowly and over a period of time I was changing. I was developing a sensitivity. It didn't matter what the emotions were that I was receiving—the fact of their existence for me was making me more aware of them and more aware of what the emotions of the people at the other end of my comm lifeline might be.

Not good. It was destroying my objectivity.

I debated shutting the Langley circuit down for a few hours a day to give me time to rest up, but the mission wouldn't allow it and I knew it. That meant that I had to be continually on my guard, ready to separate objective from subjective experience, to identify as alien the flux of strange emotions I now dimly identified as female pouring into me through the probe. Don't ask me why I sensed them as female. I just did.

But I knew that we didn't have long to go on this evaluation mission. I could take it without much strain, I thought—without losing too much of the implacable cool for which I'd been selected. When the Langley people completed their evaluation I would either go straight home or follow one of the possible alternate plans—one of which, thank their military hearts, involved six nuclear torpedoes snuggled in the forward compartment.

I had a sudden qualm about that—I hadn't expected to be in emotional rapport with a possible enemy. *Where is that famous cold-bloodedness, Mansard?* I decided

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to work up a set of nastiness exercises—for protection, understand? Back to death and destruction.

AS THE days crawled by I found personalization creeping in. Whether I wanted to or not I began to speculate on whether the thing in the ship really had a gender of any sort, and what kind it might be. Emotions are not a valid guide, but I thought it almost certainly had to have a sex—survival of the average species demanded that—and the odds were in favor of an advanced race's being bisexual. Anyway I found myself thinking of my unknown friend as "she." Every rule was against a personal involvement, but nobody had ever found himself in emotional relationship with a theoretical ET before. "Other people" were what you met, what you dealt with in syntaxes or mathematical constructions which had as their referents things and relationships and which carried emotions like supercargo—something easily forgotten about. If I punched the button all communication ceased. Ergo, the button stayed up and what happened was exactly the reverse of the way Man was meant to think—emotions pounded in, translating themselves—sometimes—into things and relationships. I took as a working premise that the situation possessed something I wryly dubbed iconoemotive symmetry, hoping it would take its place along with the other subatomic symmetries—I assumed that, if it were possible to go from words to emotions, then I could damn well go from emotions to words and make it at least as automatic as the other way around. Certain of the processes wouldn't reverse, of course. I would have to feel the emotion or process it—that was a good null-emotional word—translate it into speech, then block and purge the emotion that gave rise to the words. Preserving objectivity.

I gave it a good try. Picture meeting a friend in the morning. You exchange the usual phatic greeting. Then you inquire after his health in the ritual way and he says, "Got a headache today." You tut-tut and go on. "Hello" is phatic, "Got a headache" is not—but in the context of casual conversation the whole exchange is emotionally empty. He doesn't expect you to fall over his headache and you certainly don't intend to—in fact, the only reason he mentioned it was that it was the first thing on his mind and he didn't bother to hide it.

Now suppose that when you met this guy, instead of saying anything you were immediately clobbered with the pain of his headache. Suppose further that, because he knew damn well you didn't care two chits about his head, he had given you the barest sketch of the pain he was feeling. Suddenly it's *your* pain. What do you do? Does it make sharing an experience any

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easier? Any fuller? Or do you simply learn to block it the way you learn to block it when it is merely suggested by words?

You don't learn to block it. Not in a period of days, not this cowpoke. I was being overwhelmed, drowned in somebody else's emotions, and I knew it. Within two days it was like having two people living in my body, one whom I knew and one who was completely unpredictable in mood.

A good way to go crazy.

But the moods got to be predictable.

Don't ask me how it happened, I don't know. All I know is that at some point in the next few days I began to anticipate what the next round of emotions would be. Without my fully realizing it, experiencing them was ceasing to be a strain. They were just there, like my own. It might have been a protective device my brain had mustered to meet the occasion, giving me the illusion of control—which is what anticipation is—or it might actually have been some sort of deductive process I had developed. But it worked—I stayed sane.

And found that it worked in directions I didn't expect and probably don't want. From the bare exchanges with Langley, which were the same clipped conversations they had always been, I began to get unmistakable emotional overtones, clear and sharp. It was unfortunate that the first ones I got told me that they were worried that I was going insane. The message was not in what they said, but in what they didn't say—the conversational net, like poetry, suddenly existed not for its strings and knots but for its holes. The silence surrounding the pronunciation of the word OM. It was impossible for them to hide anything from me.

Anything.

THIS was very embarrassing. It might have made me a superb psychotherapist, but it was rapidly turning me into a rotten soldier. A soldier is—must be—an arm of his command, a reflex machine, a mobile, thinking weapon. But not a feeling one. If bayonets had feelings they'd be people.

I decided to cover up what they were looking for—and discovered I didn't know how. I couldn't remember the precise way I had reported before. The gist of it, yes, but the exact syntax—that was what I needed. Not remembering threw me into a panic, but then I got an idea. On the pretext of checking the accuracy of some of my earlier transmissions I got them to play back to me three days' worth of reports in my own voice. I got all of it on the recorder, then spent a whole day studying it. At the end of that time I could deliver an eyewitness account of the destruction of the solar system and all

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of the works of man with all the emotional involvement of a turnip.

They outsmarted me. By this time they were interested enough in what was happening to me to be doing a little analysis of their own and *their* syntax analyzers duly reported that I had inexplicably undergone a sudden regression to the speech patterns I had used at the start of the mission.

H'm.

It did not take long for them to figure out what I had done. So it was stalemate.

But I could still do something other than analyze voiceprints—I could anticipate. And I anticipated that they would resolve what was rapidly becoming a very dangerous situation by ordering me to attack. They could order me to return, of course, but I could refuse and then the whole dirty thing would be out on the washline. I was sure that they believed they had about a fifty-nine percent probability that I could still carry out a successful attack on the ET ship and my soulmate inside if I were sufficiently motivated—and they were right. I was also aware that if I didn't, it was certain that they had little surprises built into the ship that would assure my not being any aid or comfort to the enemy. Like remote-operated destruct systems. It was only reasonable, I suddenly realized, that they have them. I was sure they had them. And, after one or two more exchanges with Langley over nothing in particular, I *knew* they had them.

It was only a matter of the briefest time before they decided to do it—no more, maybe, then it took to get the joint chiefs together for an emergency session. Then I'd get the word to arm those deadly nuclear needles and send them boring in. I couldn't refuse without killing myself—and I still wanted very much to be alive. Self-preservation still won out over brotherhood. Just barely.

So I got myself a little sledge out of equipment stores, undogged the access hatch, floated down the little tube, undogged the weapons hatch and floated into the little tubular room where the nuclear torpedoes lived. Or rather, slept—by this time even the ship was beginning to feel sentient to me. Can a machine have emotions? Don't ask me now, but try again in a few days. I was aware, at times dimly and at times acutely, that a fully sentient universe would mean the end of humanity as we knew it, because you can't manipulate a living thing and intelligence, as we understood it, impressed itself upon the universe by manipulating it. Picture building a road if all the rocks you had to bulldoze out of the way were alive and conscious. And you'd need a relocation and reparation committee to wind your watch.

So I got out my sledge and braced myself against the opposite wall of the tube and looked for ac-

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cess covers. And looked.

Somebody back there had been just a little bit smarter than I'd figured on. I found no access covers, no exposed machinery of any kind. No delicate launching or aiming gear. I didn't have the faintest idea how the weapons aimed—maybe magnetically right through the casing, maybe with a transmitter/receiver combination built into the missile cradle. But whatever it was, it was designed to be me-proof.

That was a dead loss. I went forward through the tube and stowed the sledge. I toyed with the idea of smashing the radio, but that sort of giveaway would be just what they needed to turn me into a nice rosy ball of radioactivity.

I got to the port and looked out. The orbit was stabilized so that that port always looked toward Alice's ship. By now I was calling "her" Alice automatically, after the military designation for the mission, Alis-2—besides, if she had any friends aboard, I had been unable to pick them up.

Maybe she was alone, too, an advance scout trying to assess alien motives, just as I was. Suppose she even had the ET equivalent of our mindscanner-that-didn't-work? How the hell could I tell, without directly violating orders? Couldn't.

Then again, what sort of esthetic did a race develop that made them comfortable in a ship that looked so insectlike? What was the function of those leglike tubes? If they were duplicate living quarters leading off the main cabin the ship had twelve occupants, not one. Or maybe it had been commandeered, to be occupied by one person for this mission alone.

I thought about what Alice might be doing now—filling out her equivalent of mission status reports, maybe telepathically for all I knew? Filing them with her base somewhere, talking about that weird globular ship that looked so much like a melon? What kind of goofy creature could be comfortable in one of those?

Then I thought about the missile button.

I went to the comm desk, which was large enough to sit at, and got a sucktube of water. In a few short hours, barring unforseen accidents, the comm would buzz and Langley would give me the word to blow Alice and her ship to hell. Mercurial Alice, soft Alice, whose emotions—which I stole—had been keeping me alive for this long and absolutely empty trip. My body, Alice's emotions—together we made a person. She might be physically strange to me—maybe furry, maybe have too many arms—but the inside of her head was as familiar to me as mine—and more wonderful for its suppleness, its brilliance. I could destroy it. Bring her back with me and take her off the ship and then destroy it. Bring her back with me and convince Langley it was okay. Find a way to

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work something out, hard as it might be—their authorities, our authorities. We were so close together, her feelings *had* to be the same as mine—physical differences were no real barrier, we could straighten everything out if we wanted to.

I HIT the comm desk with my fist, drifting away with the reaction. I *had* to do it! The stars shone in through the pitch blackness of the port, each one a gem, each a tiny hard light on the tarred sky, each its own unique self as I had learned to see them through Alice's eyes; each with its own emotional thrill, its own stark beauty. To lose that beauty forever by losing her—the one through whom I had come to see it—I couldn't do that, not with all other considerations aside.

In the utter strangeness of the situation, cut off from all other life but the two of us, I had begun to feel for the woman in the ET ship something akin to love.

Yes, damn it.

Impossible maybe on Earth, on any planet with trees and water and something approaching a normal environment, but out here we two were our world. Her ship and mine—the gross, insectlike hulk and the tiny sphere, caught together in emptiness, far from a home that neither of us knew very well, lost in silences and nights and great untouchable tapestries—were an entire sentient universe incarnate. I had been miraculously reborn through her, had come to know that things possessed a quality of realness and unique beauty—each thing to itself—and from her, through the improbable electronic umbilical of the Langley circuit, I had learned slowly and painfully not only to know these things, but to praise them.

I thought back over cadet days, remembered the honor commission I had almost won—until the commandant vetoed it. Then there was the Vega assignment, first berth on an interstellar exploration, that I'd lost to some captain's son at the last minute.

And now this—some fool slob at Langley was about to snatch something so far beyond those early dreams that the world shuddered.

Not this time. Too much at stake.

Frantically I looked around the cabin. There had to be something, some object, some tool that I could use to disable the torpedoes. Something I could think of to stop them from issuing the order, some story to delay it . . .

Even as I thought, my brain fighting the molasses of fear that trapped it like a fly, the comm gave the little throat-clearing burst that indicated it had acquired the Langley carrier. I was trapped like a mouse in a bottle. I looked at the missile release button, backed away from it, sweat pouring from me in

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the dry cabin atmosphere. Outside the port Alice's ship hung alien and beseeching.

I must have fought my way blindly around the cabin because the next thing I was aware of was the missile button close to my hand. I jerked away shuddering. The room was beginning to take on that ringing, metallic character of absolute fear. *Alice, make contact now, help me . . .*

The comm opened communication in the usual way, calling, "Alis-2, this is Langley . . ."

And again the missile button—the missile button became the focus of the room. As if the ship were rubber stretched out of shape to pour itself into the button, my vision narrowed down to that one single disk in the entire universe . . . and again my hand was on it and this time, paralyzed with fear, I couldn't tear it away. Langley was calling and I was trapped, so conditioned by the thing I feared that I was at the button even before they gave the order. "Final orders regarding ET mission, Mansard . . . research section concludes . . ." and my hand was on the button! My flesh was cold as death. I thought I'd vomit before they got it out . . . frantic, find a way, find a way in this last clonic instant before the word . . .

". . . concludes ET harmless. Do not harm in any way. Repeat, do not harm in any way. Final evaluation being faxed to you for contact procedures as you see fit. Acknowledge so far and we'll start feeding you return data . . ."

The act in my throat like a word, a great black thing pushing into the world, into the room. Overwhelming me. Hand on the button, now useless, unnecessary. Alice hundreds of yards away, watching, pulsing emotions soothing over me.

The act in the shape of a word: *No!*

"No, you bastards, you can't stop it now!"

Push the button.

Together we made a person . . .

The impersonal missiles needled away, vibration shaking the ship. A part of my mind followed them, visualizing their invisible path away from the ship.

Together we made a person . . .

Toward it.

The fear, the nausea, the hatred. All united in an instant of time, before the beginning, after the end. The result was peace.

The missiles struck.

The great black ship twinkled at a hundred points like a vast city, bloomed into an incredible blue-white flower that grew and grew into a sun. The great leglike extensions contracted convulsively.

Contracted. Alice was her ship . . .

The great gross insectlike thing was alive—had an exoskeleton like an insect's. Had only one passenger. *Was* the passenger. The radio was yammering, screaming things

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I couldn't make out and, obscenely, the huge hulk began to break up, pieces drifting and spinning away at their own velocities, trailing unspeakable thread-like jetsam. The emotions went on and on and on—they lived in my head, lived on in my head even after I smashed my hand raw and bloody on the button, again and again, laughing at the radio, the tears boiling from my face. Later they might even find me, drifting near the orbit. Together we made a person and the emotions went on somewhere and the thoughts that were Alice and me, far away behind the eyes, lacerated and wrecked and beached on the rocks of love, lost, hopeless, and unutterable . . . ★

★★★ GALAXY STARS ★★★

When approached for a thumbnail biography of the kind usually featured in this space, Isaac Asimov told your editors he would rather supply a brief comment on the genesis of his THE GODS THEMSELVES. Here is that comment, in his own words.

Before 1938, science fiction was written, very largely, by pulp-writer types who took time off from the western and crime stories that were their bread-and-butter. They did not know any science except the kind to be picked up from the Sunday supplements, but they did their best. In their hearts they knew that science was great—if they could only find out what it was.

Then came a period, roughly from 1938 to 1960, when science fiction often featured plausible science. Mind you, it was not expected to *teach* science; it was supposed, however, to contain some sort of evidence that the writer knew something about science.

This set the practitioners in the field a difficult task. To turn out good science fiction of the type prevalent in the 40s and 50s, one had to be able to write with sufficient quality to be publishable and at the same time to know science sufficiently well to be respectable. The double requirement was not easy to meet.

Once science fiction came to be in demand in the optical media, something had to give. What gave, of course, was science. There is now a new generation of science fiction writers, many of whom are "lit-major" types. They know nothing about science except what they pick up from each other's science fiction and, unlike the honest pulpers of the 30s, have no respect for genuine science.

Well, I haven't written any novels since 1957 (except for the novelization of a screen-play, which doesn't count) so you can see I belong to the "hard" science fiction group.

In fact, when I sat down to write another novel at last, I decided to have the courage of my convictions and adopt the very narrowest and hardest definition of science fiction: "Science fiction is that branch of literature which deals with the future of science and scientists." The result was THE GODS THEMSELVES.

I hope you like it. But if you don't, no hard feelings. . .

—ISAAC ASIMOV

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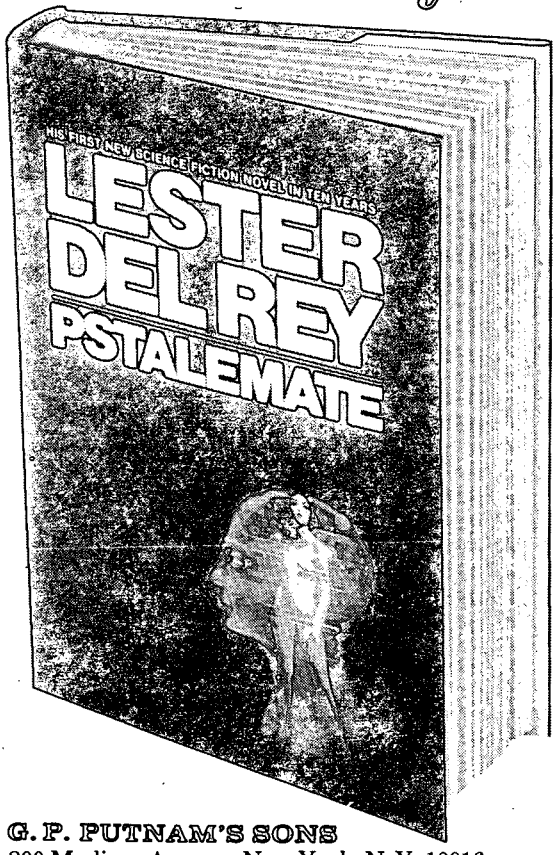

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